Supplement #13

Dragon – Iguana Practice #1

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing

2. F(x) decreasing

3. F(x) relative maximum (x- value only)

4. F(x) relative minimum (x- value only)

5. F(x) concave up (smiles)

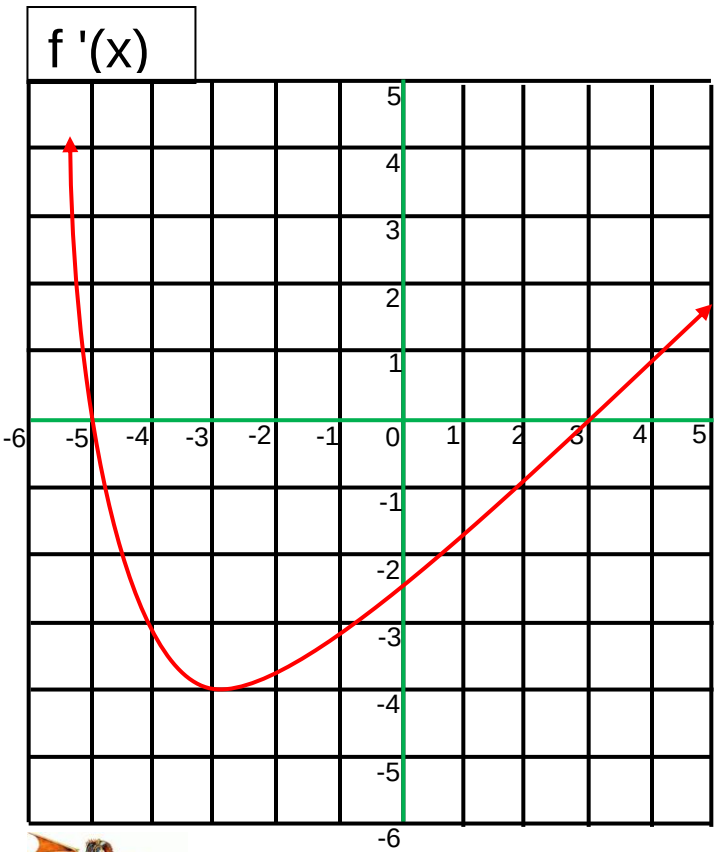
6. F(x) concave down (frowns)

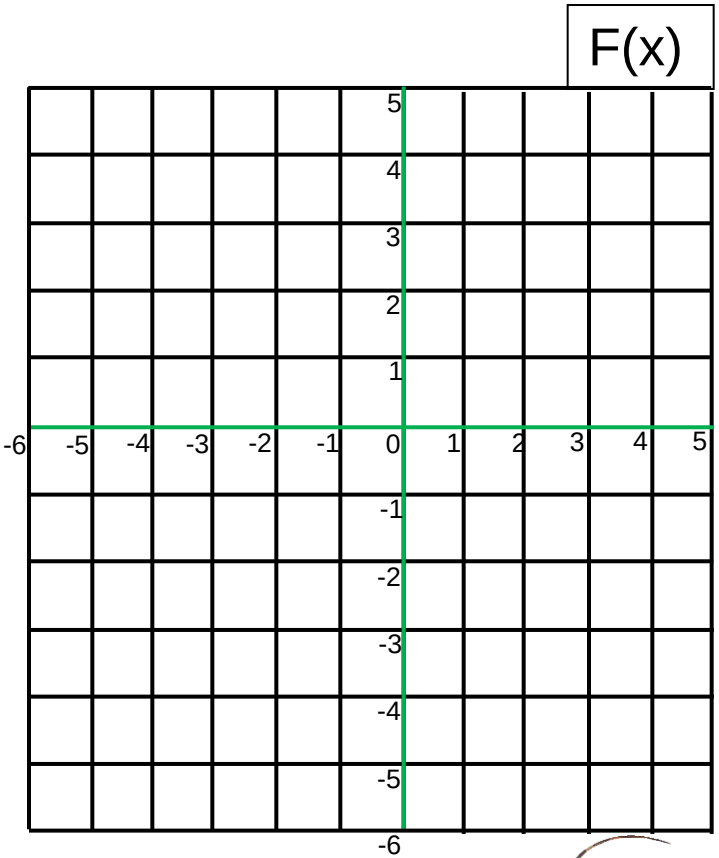
7. F(x) inflection points (x- value only)

8. degree of F(x)

9. End Behavior: $As\ x \to +\infty \quad F(x) \to$

   $As\ x \to -\infty \quad F(x) \to$

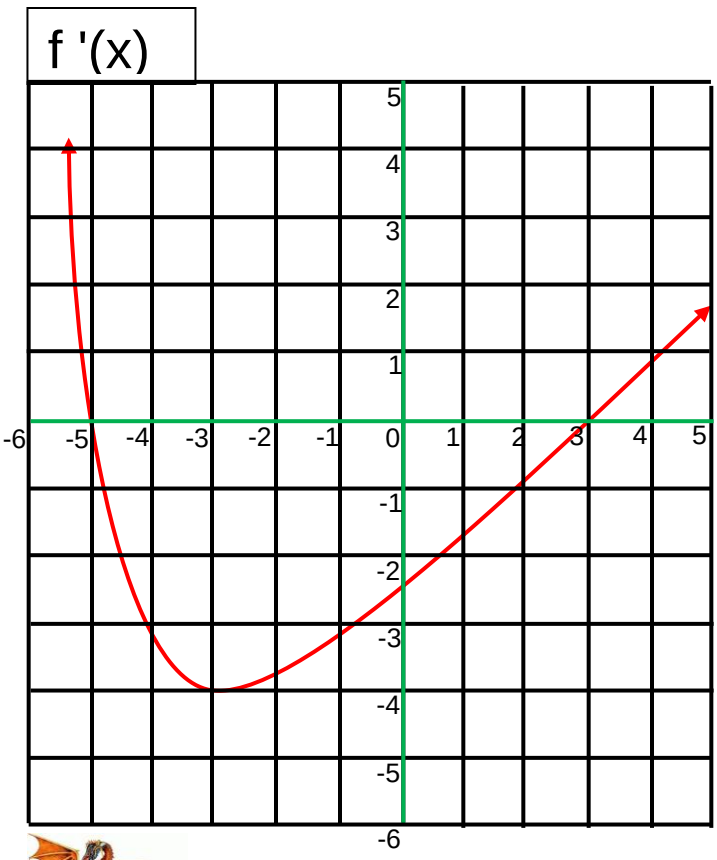


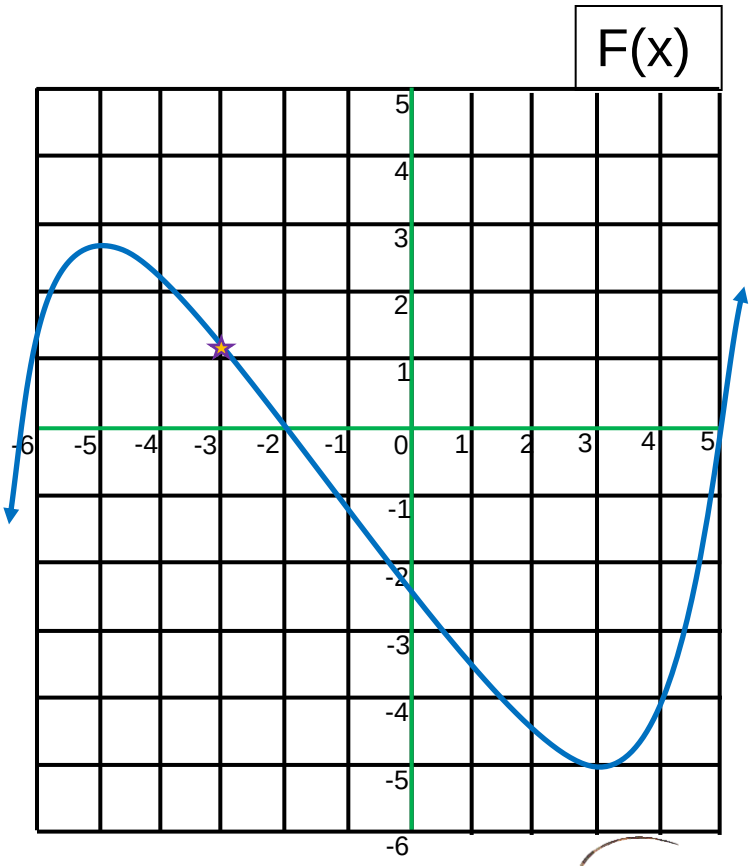


Dragon – Iguana Practice #1 - **KEY**

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing $(-\infty, -5) \cup (3, +\infty)$
2. F(x) decreasing $(-5, +3)$
3. F(x) relative maximum (x- value only) x = –5
4. F(x) relative minimum (x- value only) x = 3
5. F(x) concave up (smiles) $(-3, +\infty)$
6. F(x) concave down (frowns) $(-\infty, -3)$
7. F(x) inflection points (x- value only) x = –3
8. degree of F(x) $+x^3$
9. End Behavior: $As\ x \to +\infty \quad F(x) \to +\infty$
   $As\ x \to -\infty \quad F(x) \to -\infty$





Dragon – Iguana Practice #2

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing

2. F(x) decreasing

3. F(x) relative maximum (x- value only)

4. F(x) relative minimum (x- value only)

5. F(x) concave up (smiles)

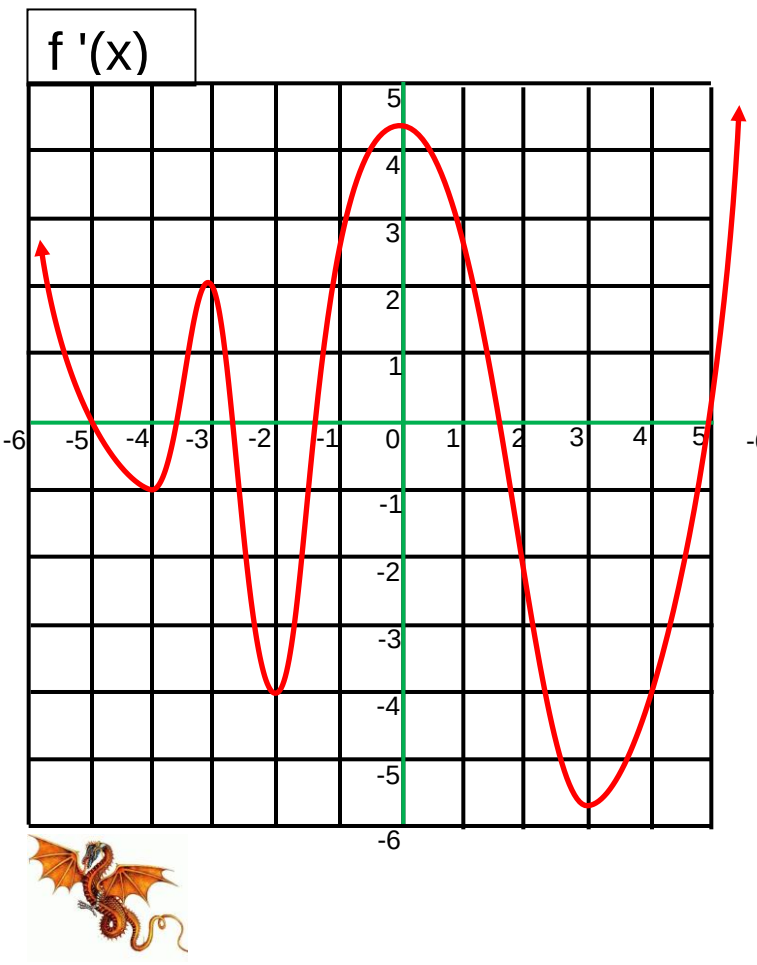
6. F(x) concave down (frowns)

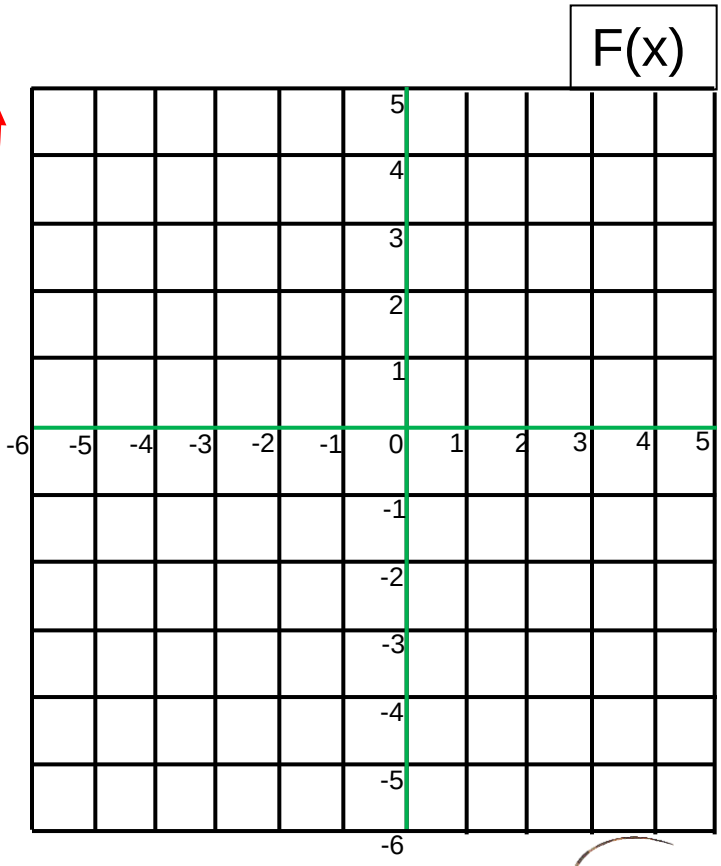
7. F(x) inflection points (x- value only)

8. degree of F(x)

9. End Behavior: $As\ x \to +\infty \quad F(x) \to$

$As\ x \to -\infty \quad F(x) \to$





Dragon – Iguana Practice #2 - **KEY**

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing $(-\infty, -5) \cup (-3.5, -2.5) \cup (-1.5, 1.5) \cup (5, \infty)$

2. F(x) decreasing $(-5, -3.5) \cup (-2.5, -1.5) \cup (1.5, 5)$

3. F(x) relative maximum (x- value only) x = – 5, x = –2.5, x = 1.5

4. F(x) relative minimum (x- value only) x = –3.5, x = –1.5, x = 5

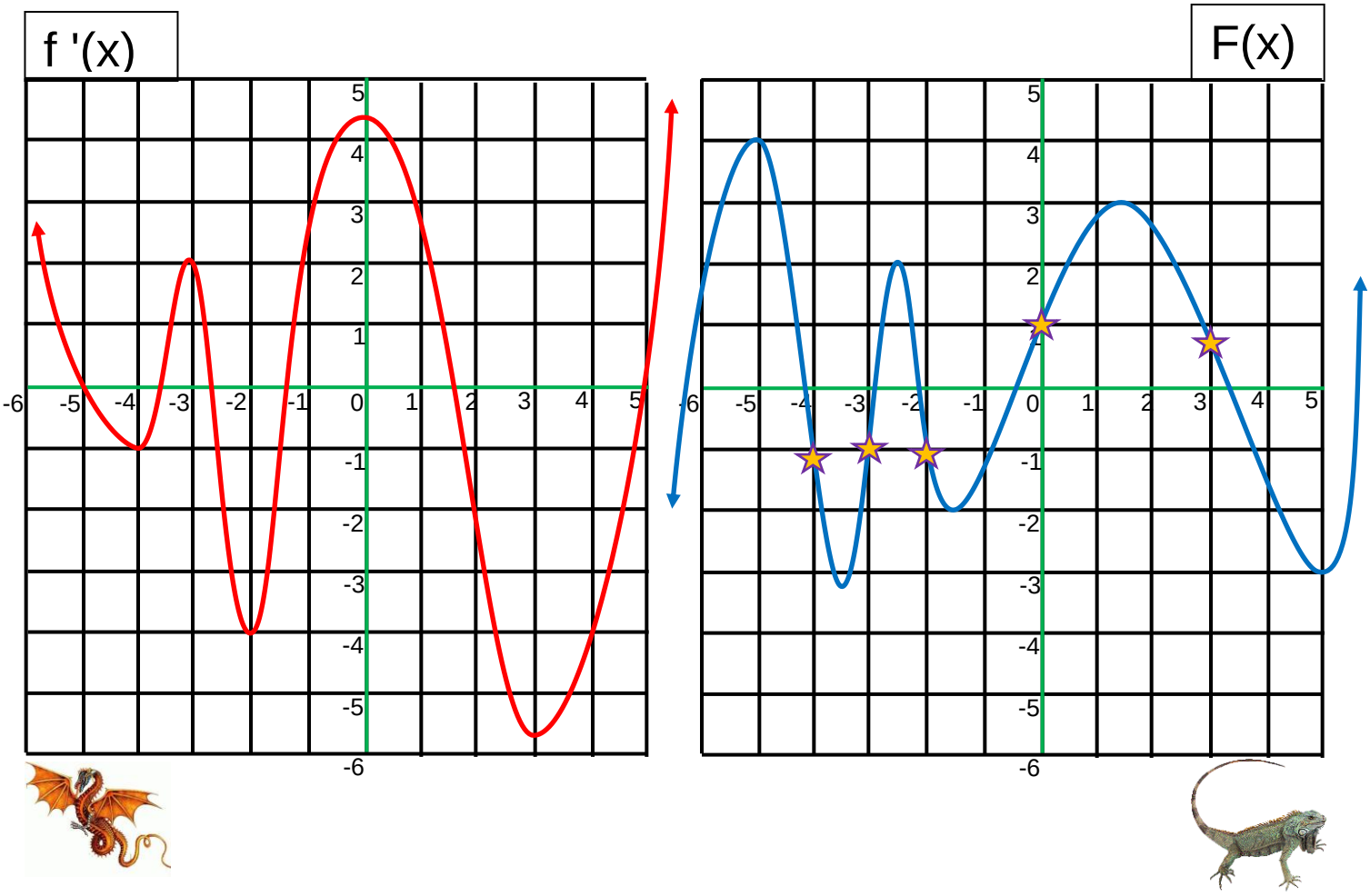
5. F(x) concave up (smiles) $(-4, -3) \cup (-2, 0) \cup (3, \infty)$

6. F(x) concave down (frowns) $(-\infty, -4) \cup (-3, -2) \cup (0, 3)$

7. F(x) inflection points (x- value only) x = –4, x = –3, x = –2, x = 0, x = 3

8. degree of F(x) $+x^7$

9. End Behavior: $As\ x \to +\infty \quad F(x) \to +\infty$
   $As\ x \to -\infty \quad F(x) \to -\infty$



Dragon – Iguana Practice #3

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing

2. F(x) decreasing

3. F(x) relative maximum (x- value only)

4. F(x) relative minimum (x- value only)

5. F(x) concave up (smiles)

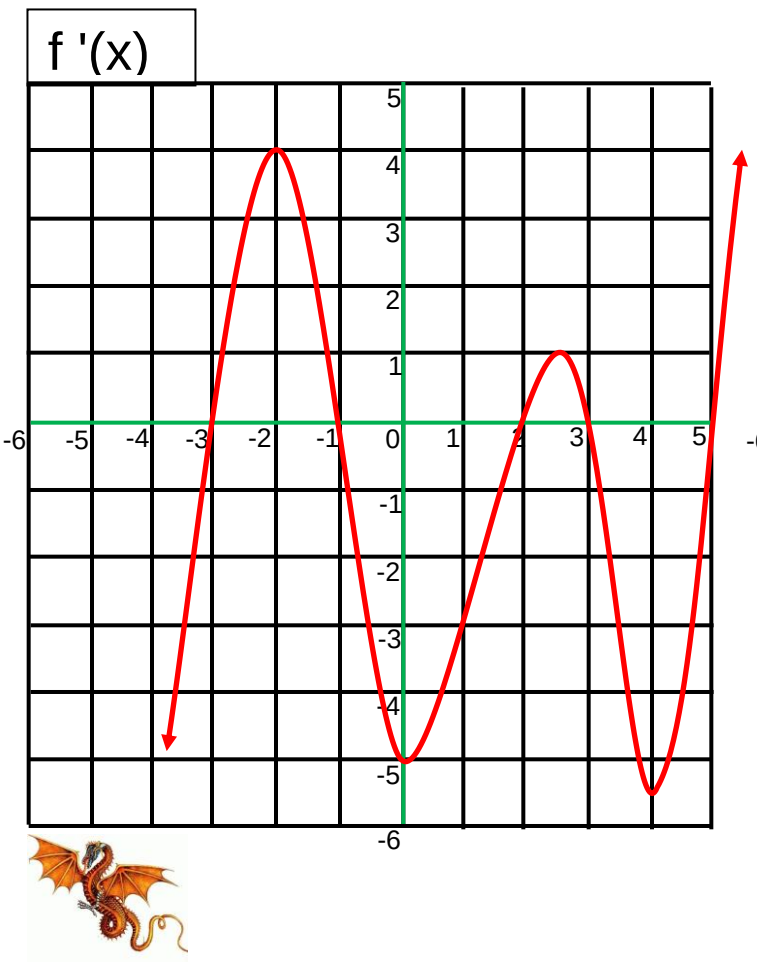
6. F(x) concave down (frowns)

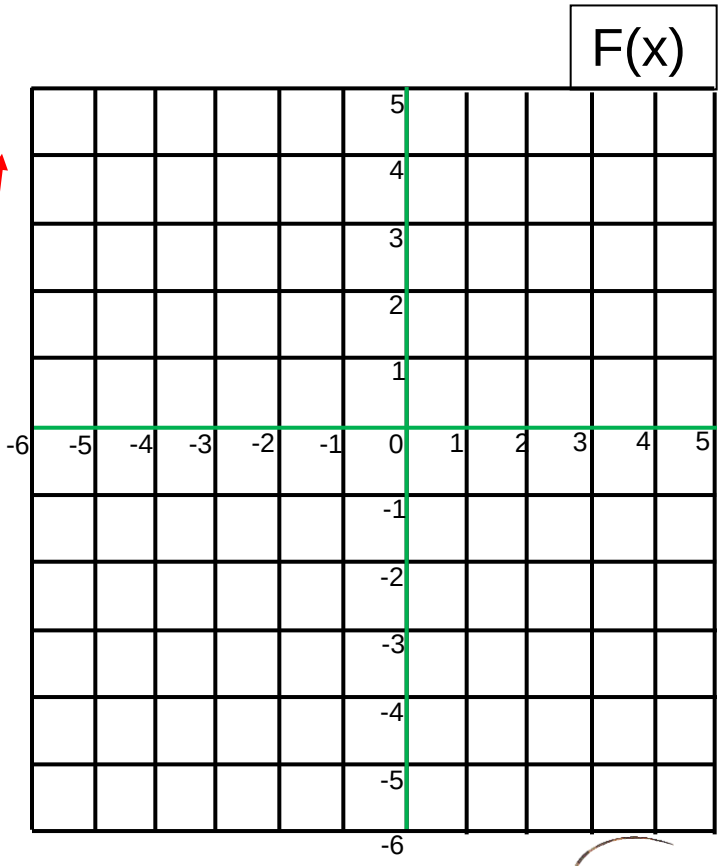
7. F(x) inflection points (x- value only)

8. degree of F(x)

9. End Behavior: $As\ x \to +\infty \quad F(x) \to$

$As\ x \to -\infty \quad F(x) \to$

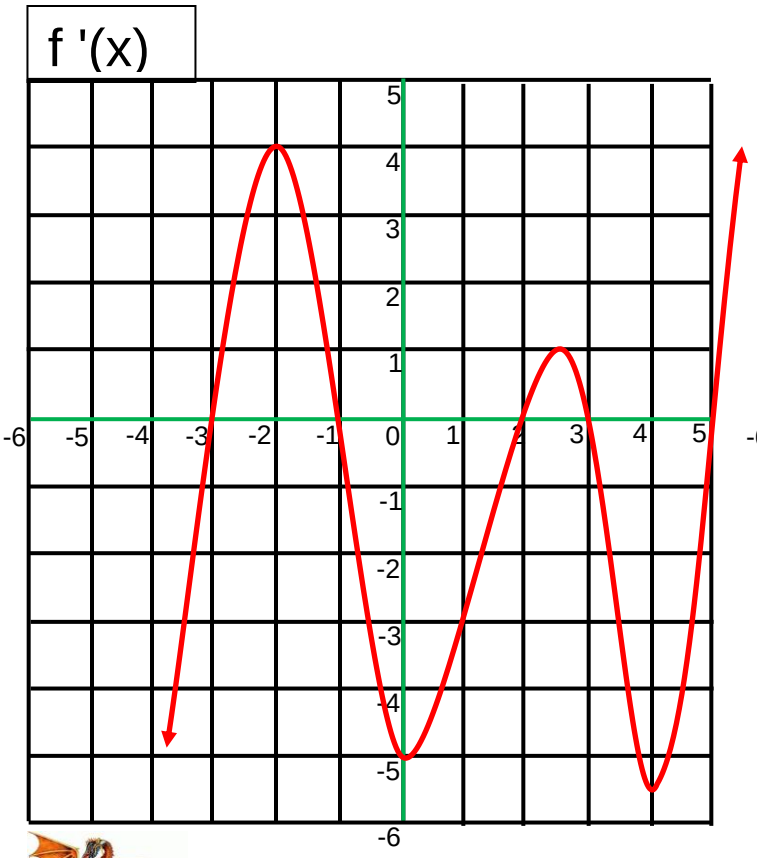


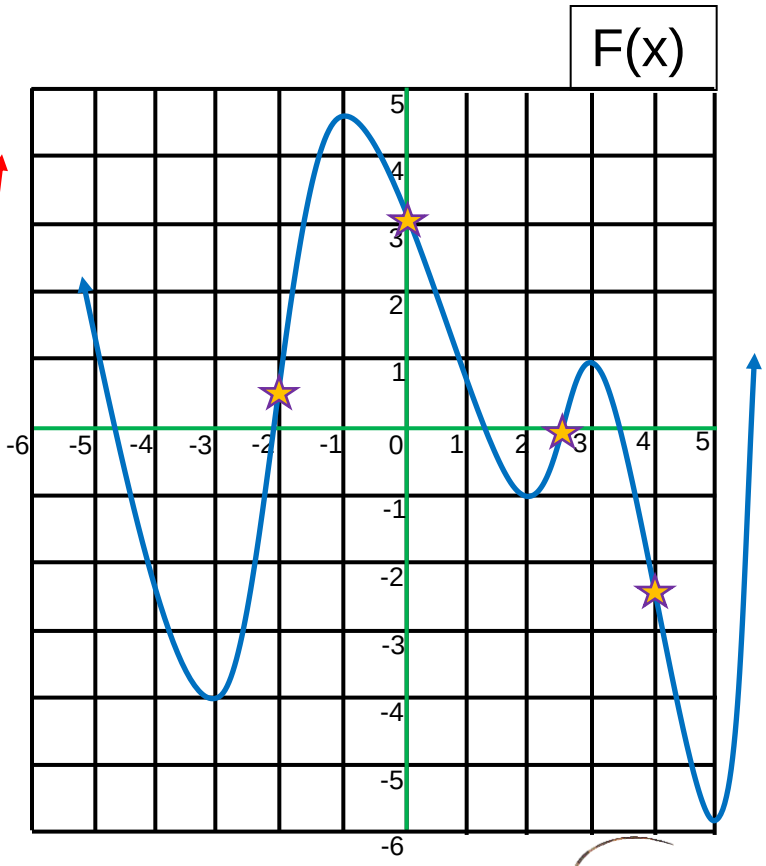


Dragon – Iguana Practice #3 - **KEY**

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing $(-3, -1) \cup (2, 3) \cup (5, \infty)$
2. F(x) decreasing $(-\infty, -3) \cup (-1, 2) \cup (3, 5)$
3. F(x) relative maximum (x- value only) x = – 1, x = 3
4. F(x) relative minimum (x- value only) x = – 3, x = 2, x = 5
5. F(x) concave up (smiles) $(-\infty, -2) \cup (0, 2.5) \cup (4, \infty)$
6. F(x) concave down (frowns) $(-2, 0) \cup (2.5, 4)$
7. F(x) inflection points (x- value only) x = –2, x = 0, x = 2.5, x = 4
8. degree of F(x) $+x^6$
9. End Behavior: $As\ x \to +\infty \quad F(x) \to +\infty$
   $As\ x \to -\infty \quad F(x) \to +\infty$





Dragon – Iguana Practice #4

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing

2. F(x) decreasing

3. F(x) relative maximum (x- value only)

4. F(x) relative minimum (x- value only)

5. F(x) concave up (smiles)

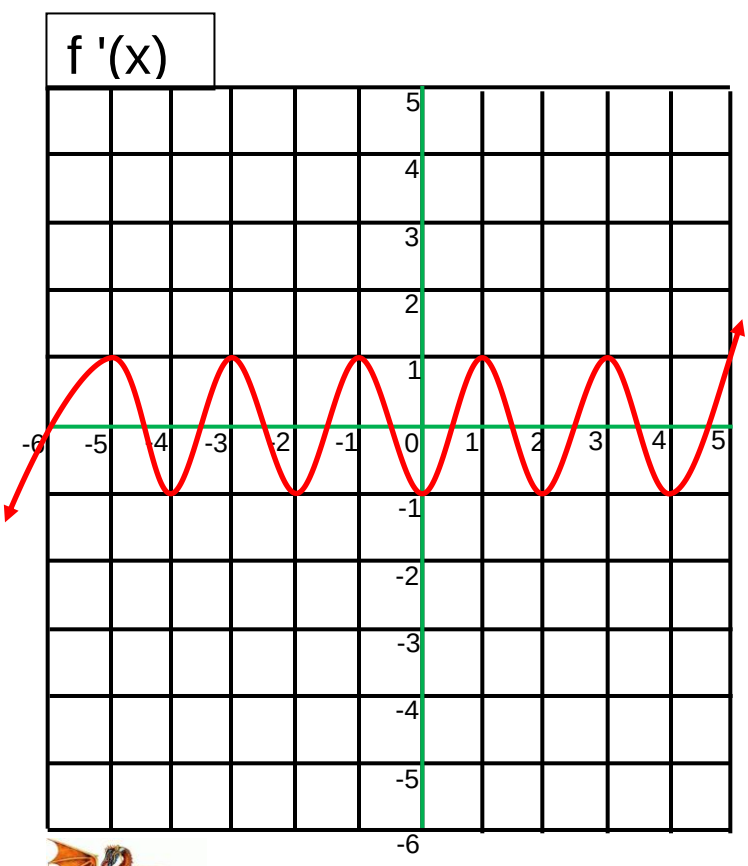
6. F(x) concave down (frowns)

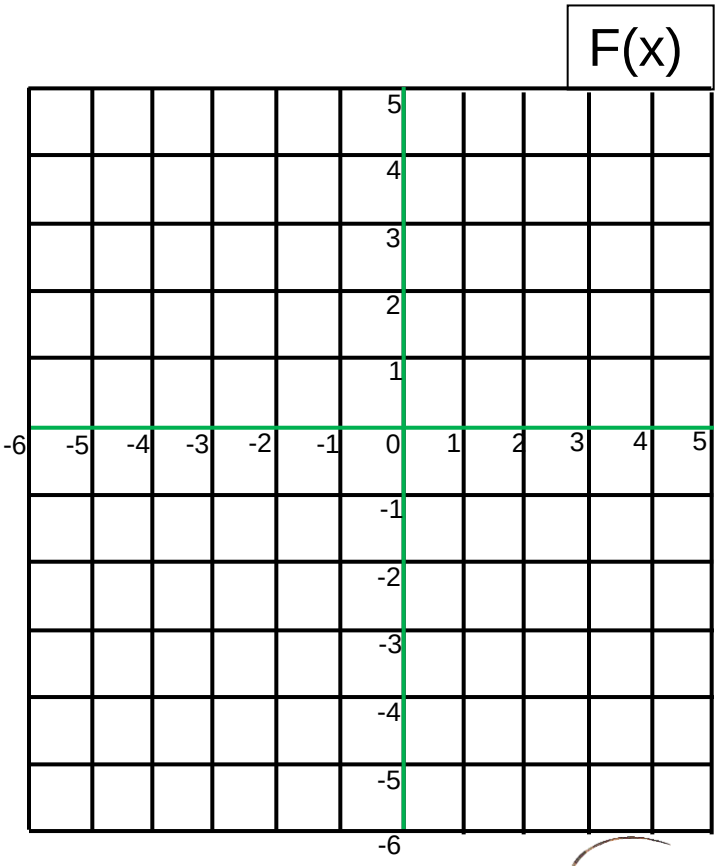
7. F(x) inflection points (x- value only)

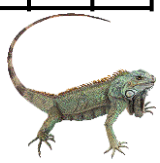
8. degree of F(x)

9. End Behavior: $As\ x \to +\infty \quad F(x) \to$

$As\ x \to -\infty \quad F(x) \to$



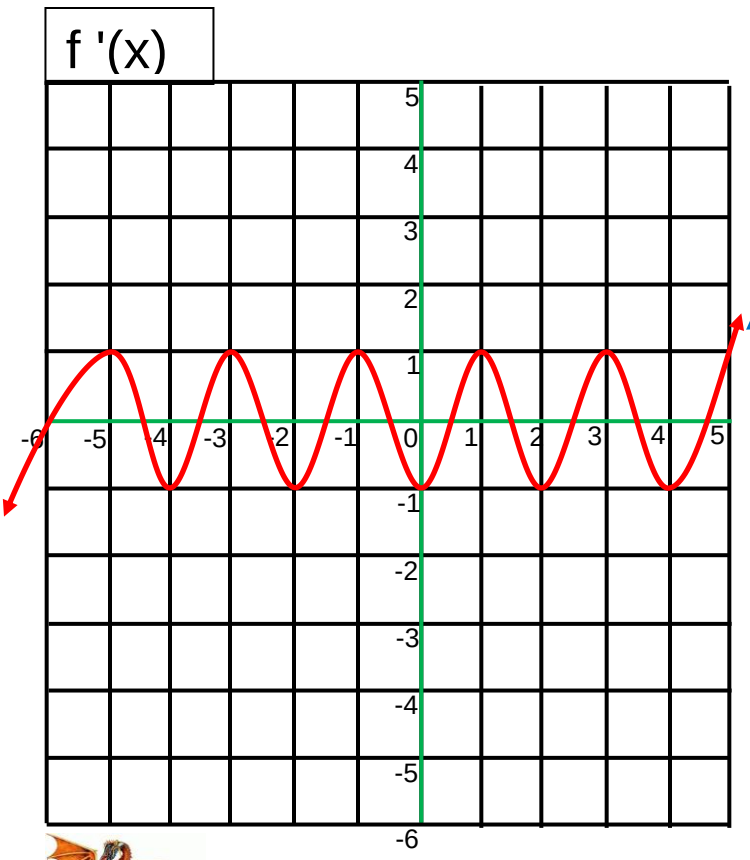


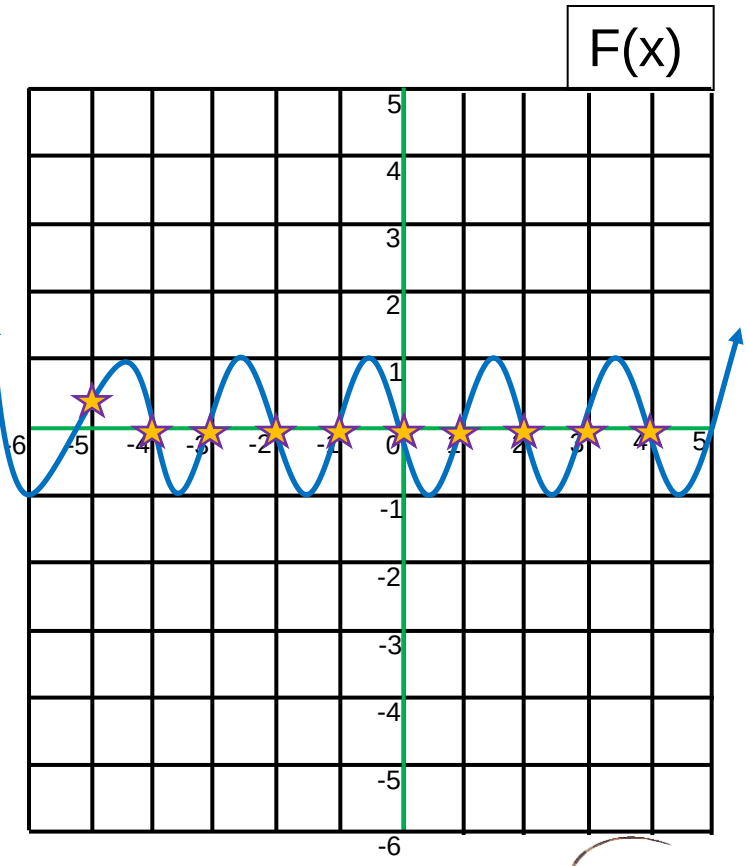


Dragon – Iguana Practice #4 - **KEY**

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing $(-6\,,-4.5) \cup (-3.5\,,-2.5) \cup (-1.5\,,-0.5) \cup (0.5\,,1.5) \cup (2.5\,,3.5) \cup (4.5\,,\infty)$
2. F(x) decreasing $(-\infty\,,-6) \cup (-4.5\,,-3.5) \cup (-2.5\,,-1.5) \cup (-0.5\,,0.5) \cup (1.5\,,2.5) \cup (3.5\,,4.5)$
3. F(x) relative maximum (x- value only) x = – 4.5, x = –2.5, x = –0.5, x = 1.5, x = 3.5
4. F(x) relative minimum (x- value only) x = – 6, x = –3.5, x = –1.5, x = 0.5, x = 2.5, x = 4.5
5. F(x) concave up (smiles) $(-\infty\,,-5) \cup (-4\,,-3) \cup (-2\,,-1) \cup (0\,,1) \cup (2\,,3) \cup (4\,,\infty)$
6. F(x) concave down (frowns) $(-5\,,-4) \cup (-3\,,-2) \cup (-1\,,0) \cup (1\,,2) \cup (3\,,4)$
7. F(x) inflection points (x- value only) x = –5, x = –4, x = –3, x = –2, x = –1, x = 0, x = 1, x = 2, x = 3, x = 4
8. degree of F(x) $+x^{12}$
9. End Behavior: $As\ x \to +\infty \quad F(x) \to +\infty$
   $As\ x \to -\infty \quad F(x) \to +\infty$





Dragon – Iguana Practice #5

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing

2. F(x) decreasing

3. F(x) relative maximum (x- value only)

4. F(x) relative minimum (x- value only)

5. F(x) concave up (smiles)

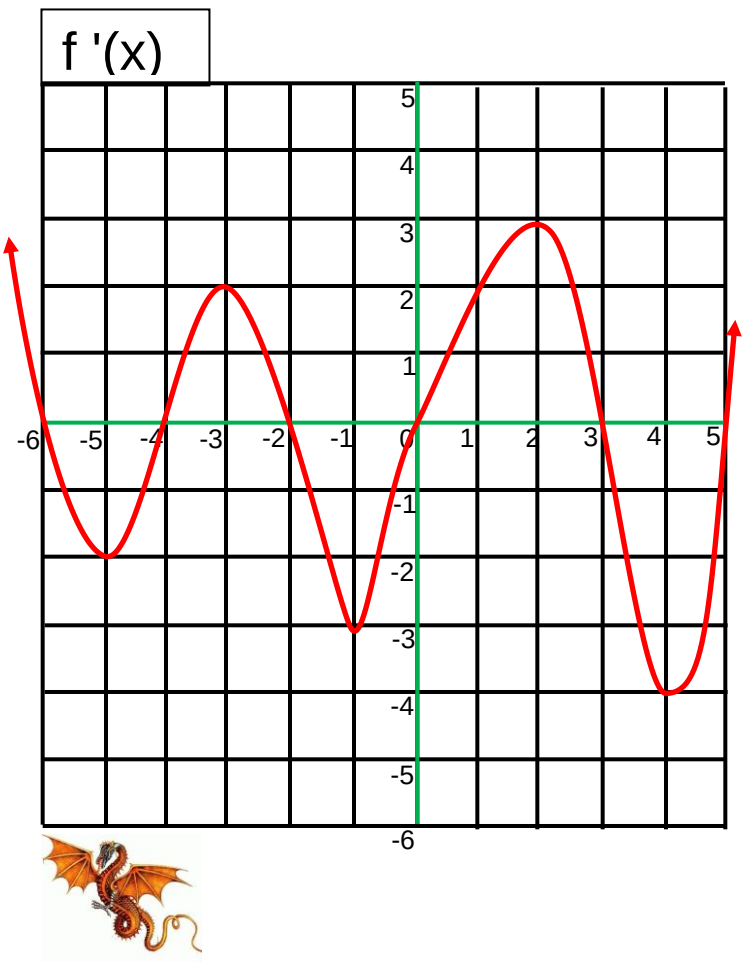
6. F(x) concave down (frowns)

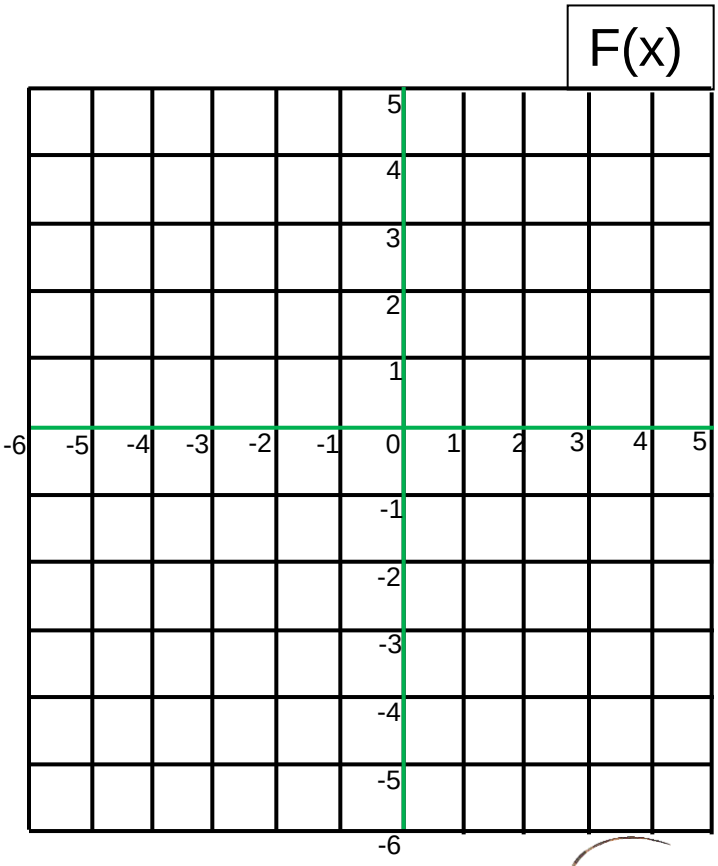
7. F(x) inflection points (x- value only)

8. degree of F(x)

9. End Behavior: $As\ x \to +\infty \quad F(x) \to$

$As\ x \to -\infty \quad F(x) \to$

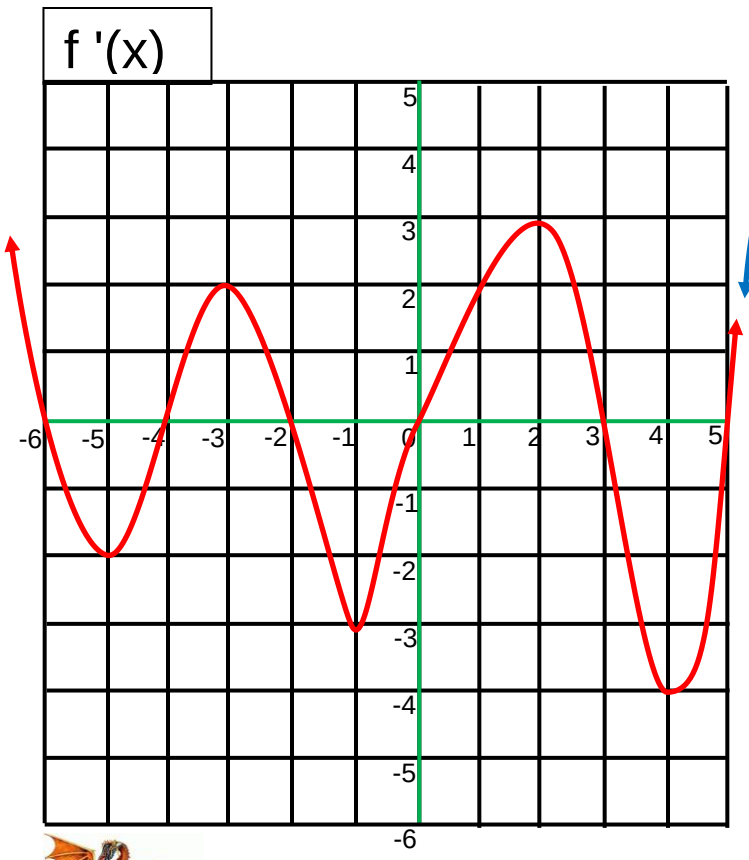


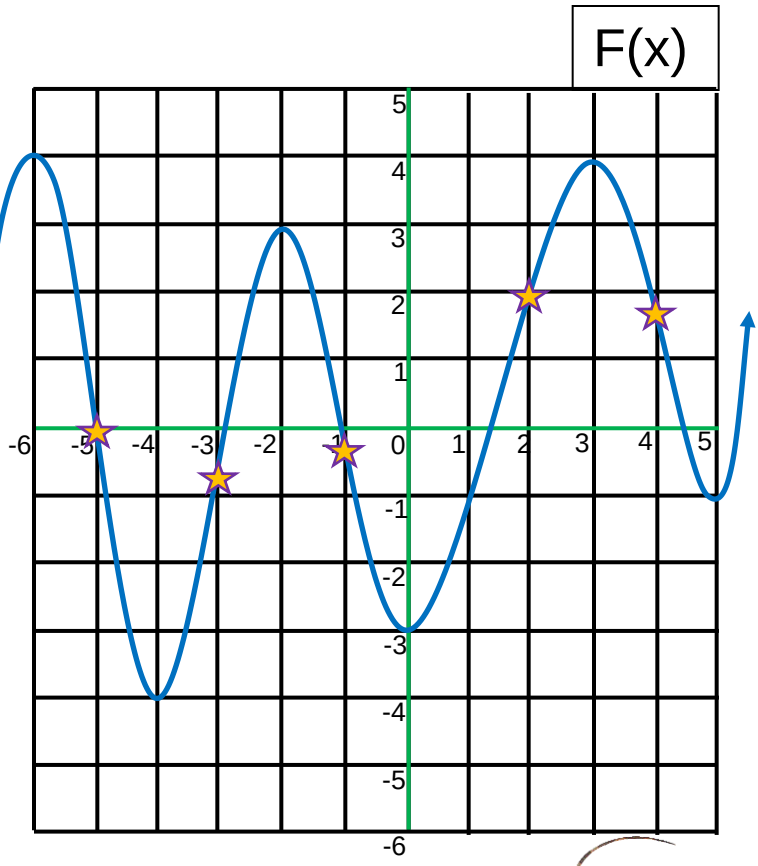


Dragon – Iguana Practice #5 - **KEY**

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing $(-\infty, -6) \cup (-4, -2) \cup (0, 3) \cup (5, \infty)$
2. F(x) decreasing $(-6, -4) \cup (-2, 0) \cup (3, 5)$
3. F(x) relative maximum (x- value only) x = – 6, x = –2, x = 3
4. F(x) relative minimum (x- value only) x = – 4, x = 0, x = 5
5. F(x) concave up (smiles) $(-5, -3) \cup (-1, 2) \cup (4, \infty)$
6. F(x) concave down (frowns) $(-\infty, -5) \cup (-3, -1) \cup (2, 4)$
7. F(x) inflection points (x- value only) x = –5, x = –3, x = –1, x = 2, x = 4
8. degree of F(x) $+x^7$
9. End Behavior: $As\ x \to +\infty \quad F(x) \to +\infty$
   $As\ x \to -\infty \quad F(x) \to -\infty$





Dragon – Iguana Practice #6

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing

2. F(x) decreasing

3. F(x) relative maximum (x- value only)

4. F(x) relative minimum (x- value only)

5. F(x) concave up (smiles)

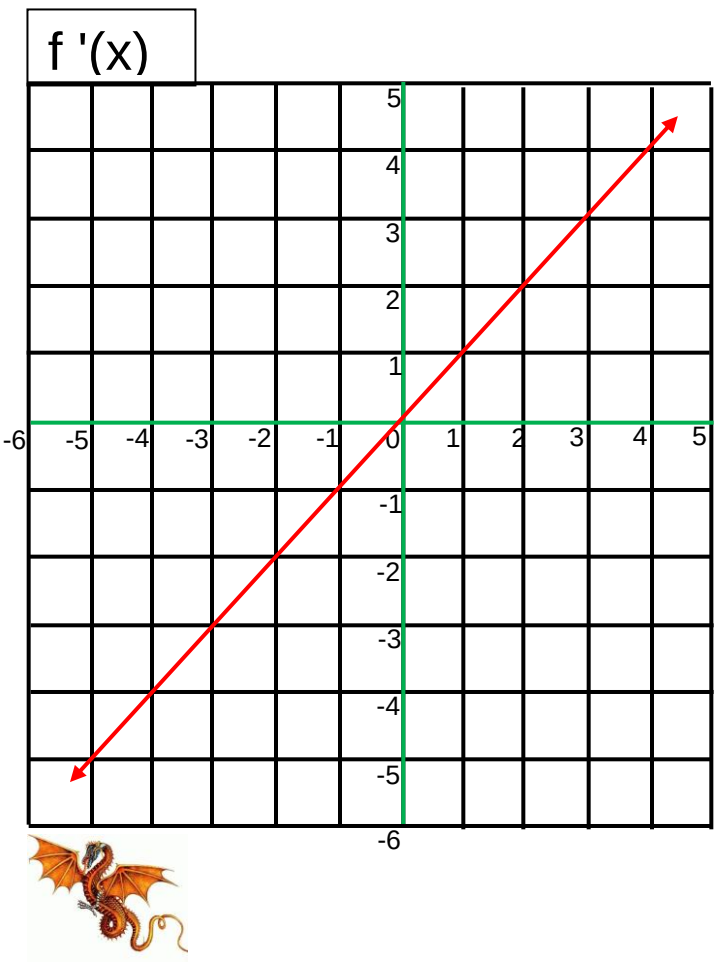
6. F(x) concave down (frowns)

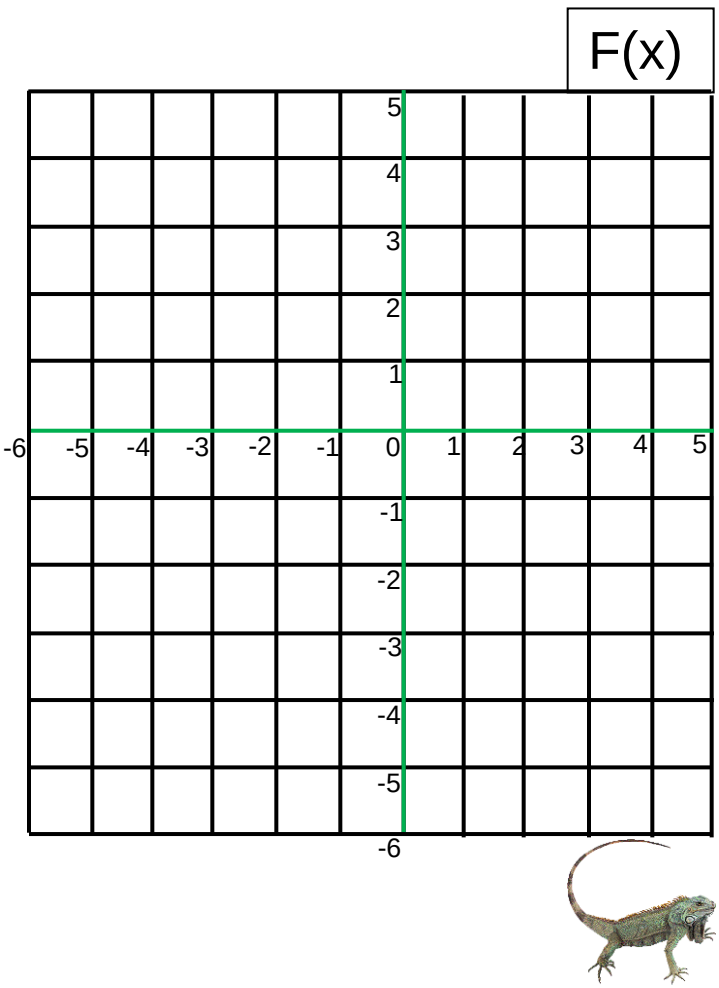
7. F(x) inflection points (x- value only)

8. degree of F(x)

9. End Behavior: $As\ x \to +\infty \quad F(x) \to$

$As\ x \to -\infty \quad F(x) \to$

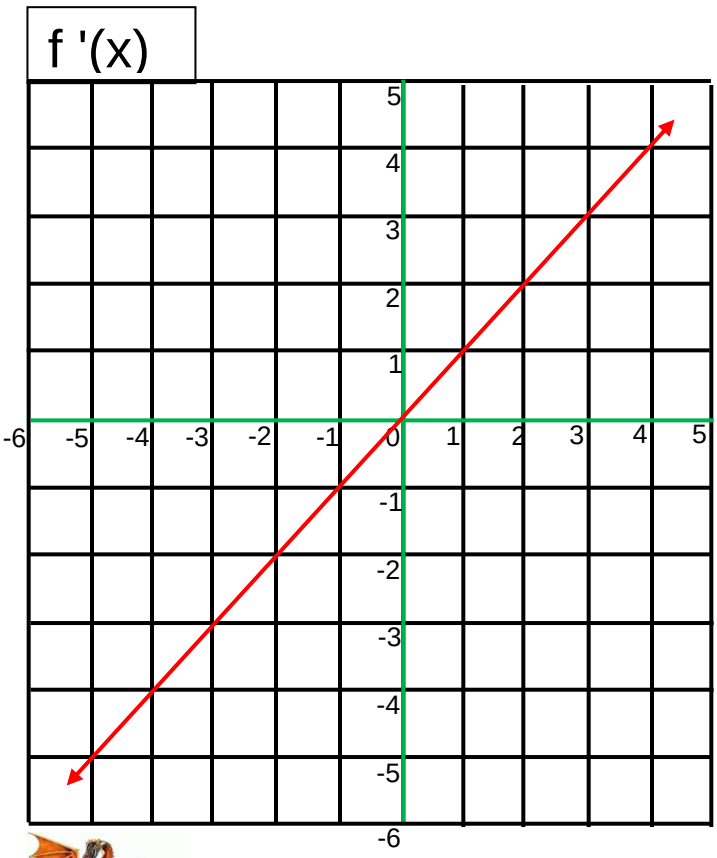


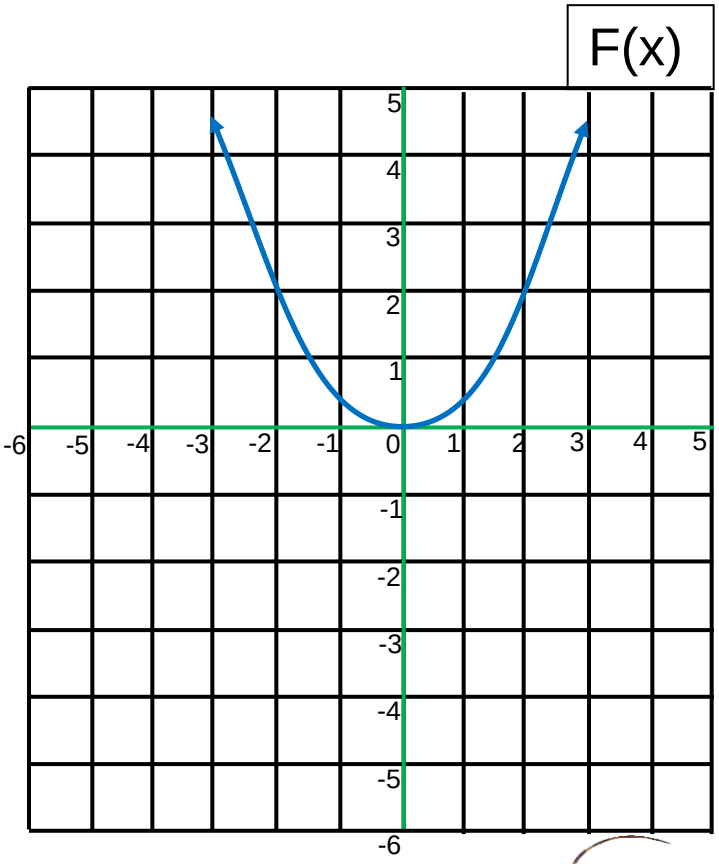


Dragon – Iguana Practice #6 - **KEY**

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing $(0, +\infty)$
2. F(x) decreasing $(-\infty, 0)$
3. F(x) relative maximum (x- value only) None
4. F(x) relative minimum (x- value only) x = 0
5. F(x) concave up (smiles) $(-\infty, +\infty)$
6. F(x) concave down (frowns) Never
7. F(x) inflection points (x- value only) None
8. degree of F(x) $+x^2$
9. End Behavior: $As\ x \to +\infty \quad F(x) \to +\infty$
   $As\ x \to -\infty \quad F(x) \to +\infty$





Dragon – Iguana Practice #7

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing

2. F(x) decreasing

3. F(x) relative maximum (x- value only)

4. F(x) relative minimum (x- value only)

5. F(x) concave up (smiles)

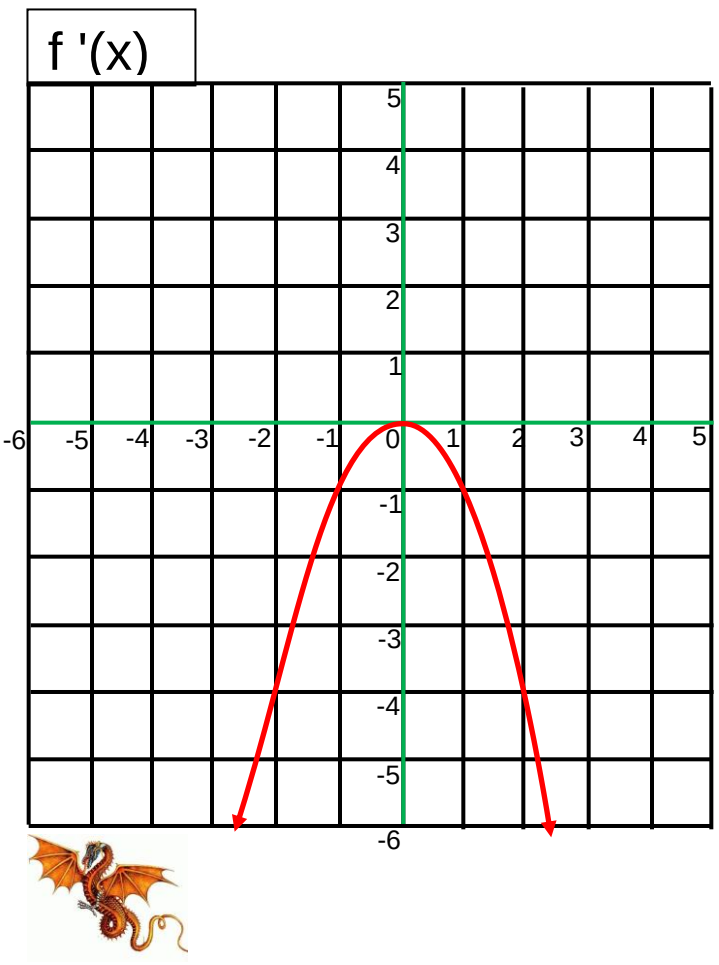
6. F(x) concave down (frowns)

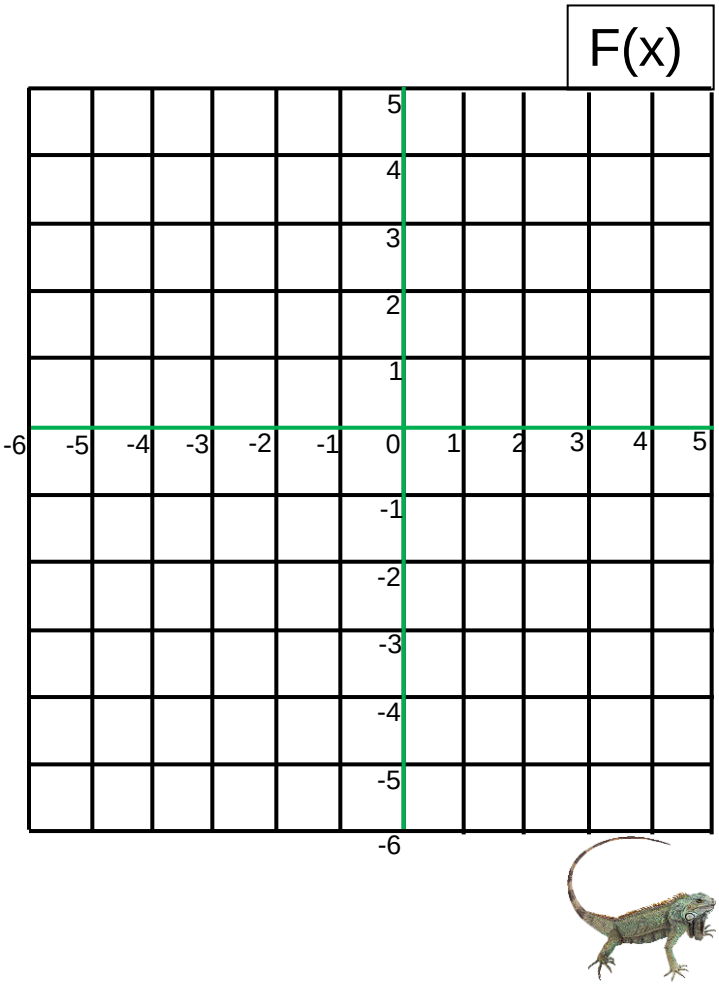
7. F(x) inflection points (x- value only)

8. degree of F(x)

9. End Behavior: $As\ x \to +\infty \quad F(x) \to$

$As\ x \to -\infty \quad F(x) \to$

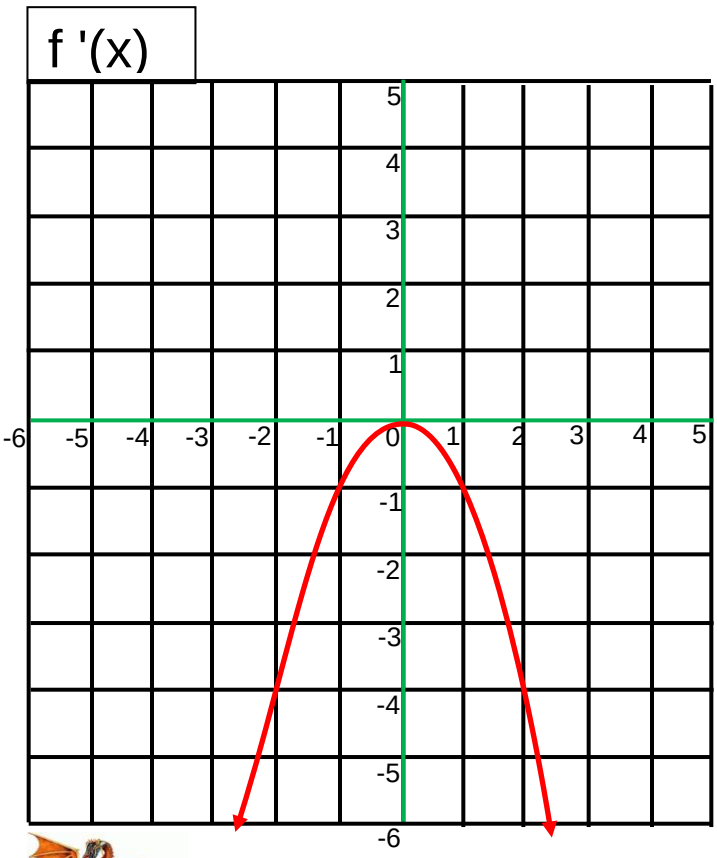


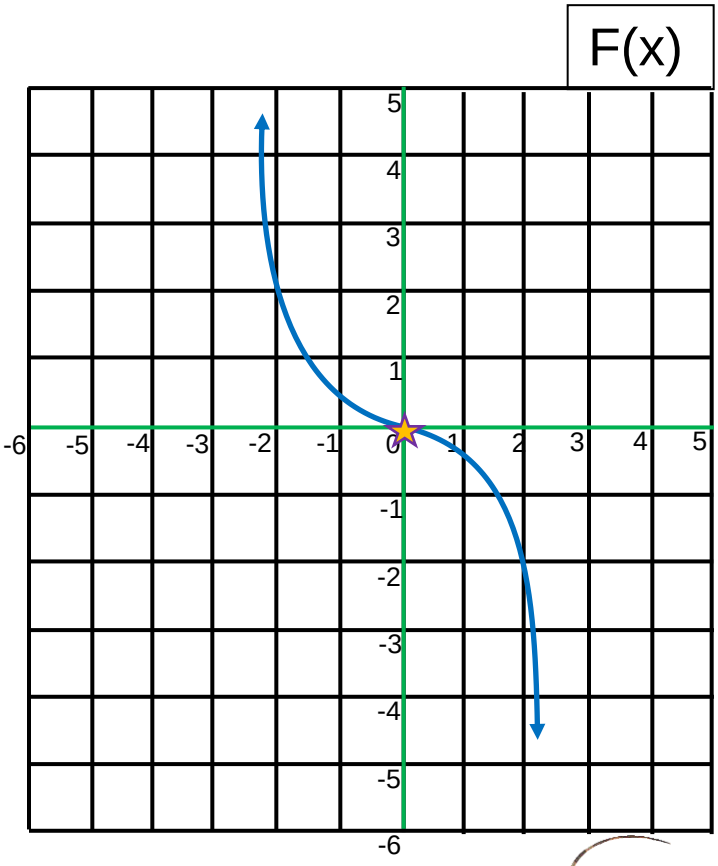


Dragon – Iguana Practice #7 - **KEY**

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing Never
2. F(x) decreasing $(-\infty, +\infty)$
3. F(x) relative maximum (x- value only) None
4. F(x) relative minimum (x- value only) None
5. F(x) concave up (smiles) $(-\infty, 0)$
6. F(x) concave down (frowns) $(0, +\infty)$
7. F(x) inflection points (x- value only) x = 0
8. degree of F(x) $-x^3$
9. End Behavior: $As\ x \to +\infty \quad F(x) \to -\infty$
   $As\ x \to -\infty \quad F(x) \to +\infty$





Dragon – Iguana Practice #8

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing

2. F(x) decreasing

3. F(x) relative maximum (x- value only)

4. F(x) relative minimum (x- value only)

5. F(x) concave up (smiles)

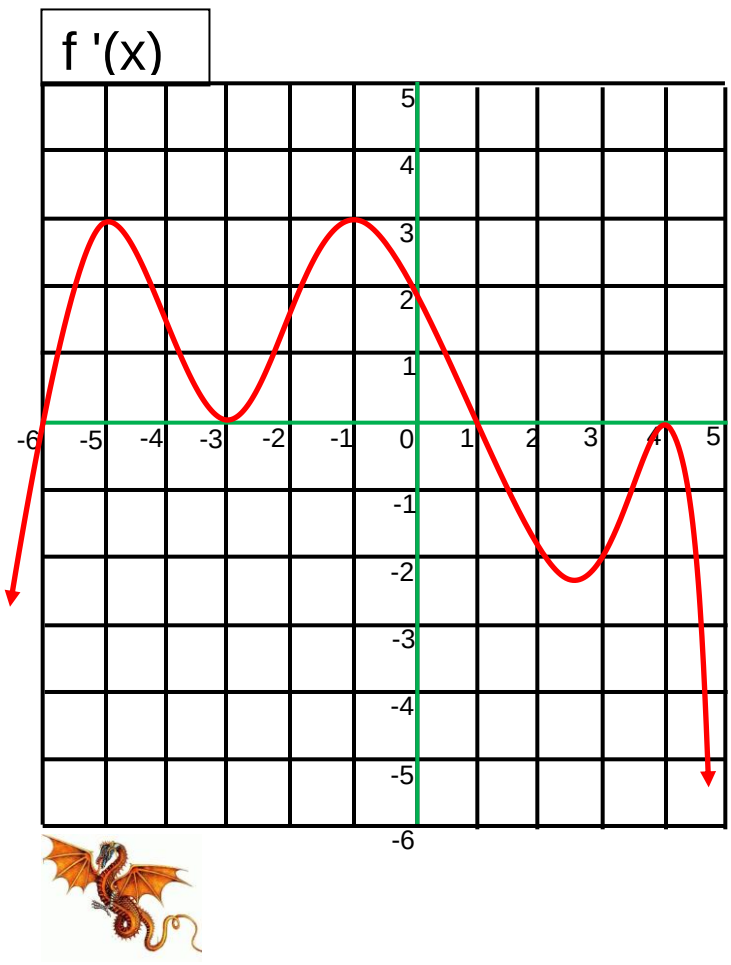
6. F(x) concave down (frowns)

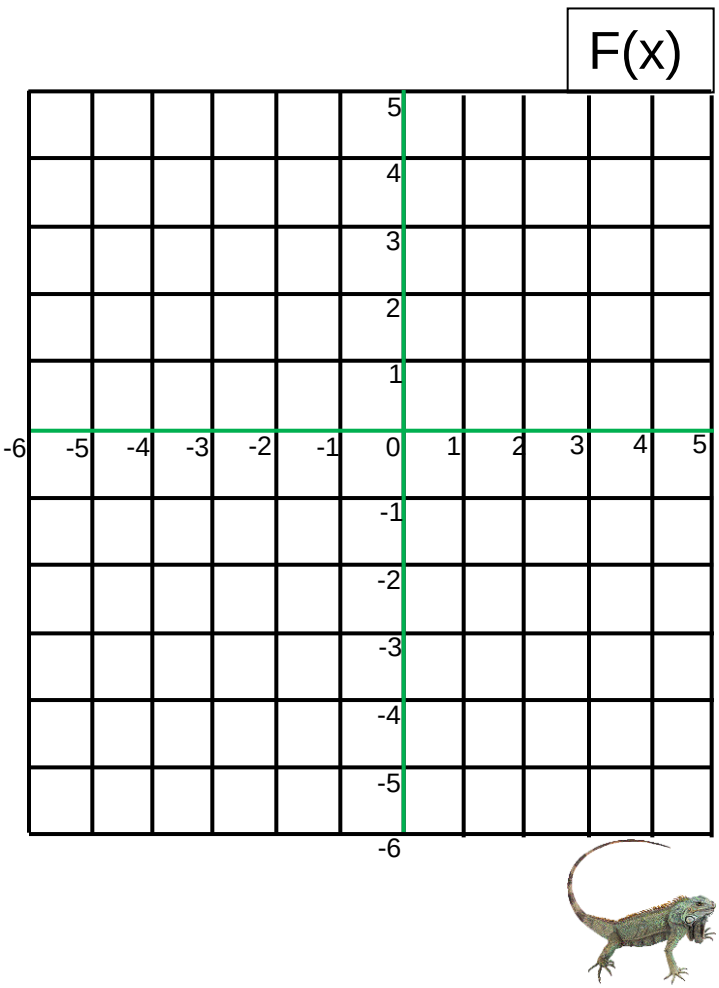
7. F(x) inflection points (x- value only)

8. degree of F(x)

9. End Behavior: $As\ x \to +\infty \quad F(x) \to$

$As\ x \to -\infty \quad F(x) \to$





Dragon – Iguana Practice #8 - **KEY**

Behold! The graph of the derivative, f'(x). Draw me a picture of the function, F(x), then answer the questions about F(x) using interval notation where appropriate.

1. F(x) increasing $(-6\,,+1)$
2. F(x) decreasing $(-\infty\,,-6)\cup(+1\,,+\infty)$
3. F(x) relative maximum (x- value only) x = +1
4. F(x) relative minimum (x- value only) x = – 6
5. F(x) concave up (smiles) $(-\infty\,,-5)\cup(-3\,,-1)\cup(2.5\,,4)$
6. F(x) concave down (frowns) $(-5\,,-3)\cup(-1\,,2.5)\cup(4\,,+\infty)$
7. F(x) inflection points (x- value only) x = –5, x = –3, x = –1, x = 2.5, x = 4
8. degree of F(x) $-x^7$
9. End Behavior: $As\ x\ \to+\infty\quad F(x)\to-\infty$
   $As\ x\ \to-\infty\quad F(x)\to+\infty$