

Review Sheet: Exponential and Logarithmic Functions Date _____ Period _____

Expand each logarithm.

1) $\log\left(\frac{u^2}{v}\right)^3$

2) $\log_6(u^4 v^4)$

3) $\log_5 \sqrt[3]{8 \cdot 7 \cdot 11}$

4) $\log_4(u^6 v^5)$

5) $\log_3\left(\frac{x^4}{y}\right)^3$

Condense each expression to a single logarithm.

6) $\ln 5 + \ln 7 + 2\ln 6$

7) $4\log_2 6 + 3\log_2 7$

8) $\log_8 x + \log_8 y + 6\log_8 z$

9) $18\log_9 x - 6\log_9 y$

10) $4\log_8 7 + \frac{\log_8 6}{3}$

Rewrite each equation in exponential form.

11) $\log_2 32 = 5$

12) $\log_5 125 = 3$

13) $\log_{19} \frac{1}{361} = -2$

14) $\log_6 216 = 3$

15) $\log_{\frac{1}{9}} \frac{1}{81} = 2$

Rewrite each equation in logarithmic form.

16) $4^2 = 16$

17) $x^{-4} = y$

18) $m^3 = n$

19) $12^x = y$

20) $a^{-7} = b$

Find the inverse of each function.

21) $y = \log_6 x^2$

22) $y = -10 \log_4 x$

23) $y = \log_5 (-3x)$

24) $y = \log_5 x^3$

25) $y = 3 \log_5 x$

26) $y = \frac{4^x}{4}$

27) $y = \frac{e^x}{3}$

28) $y = \frac{4^x}{2}$

29) $y = 3^x + 8$

30) $y = 3^x - 10$

Solve each equation.

31) $\log_{11} (-2x - 6) = \log_{11} (x + 9)$

32) $\log_{18} (5a - 1) = \log_{18} 4a$

33) $\log (2k - 4) = \log k$

34) $\log_{13} (p + 5) = \log_{13} (2p - 4)$

35) $\log_9 1 = \log_9 (1 - 4x)$

36) $\log_5 (x + 6) - \log_5 2 = 2$

37) $\log_6 (x - 4) + \log_6 4 = \log_6 45$

38) $\log_5 (x - 10) - \log_5 3 = 2$

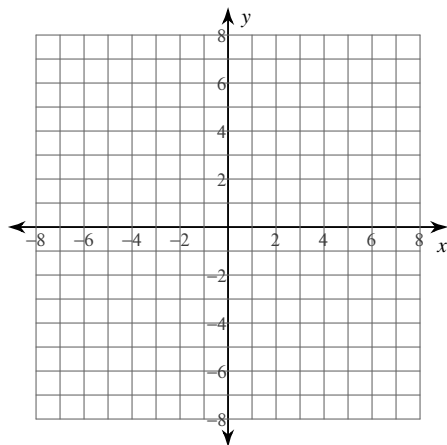
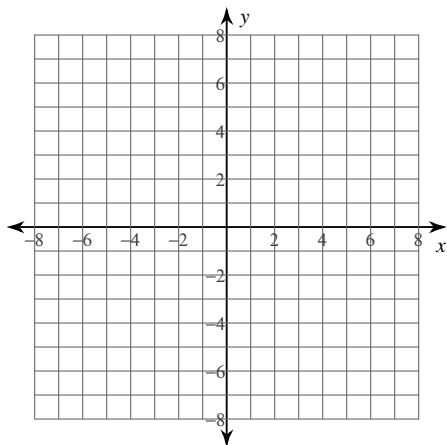
$$39) \log_4 -x + \log_4 8 = 5$$

$$40) \log_3 5x - \log_3 7 = 1$$

Sketch the graph of each function.

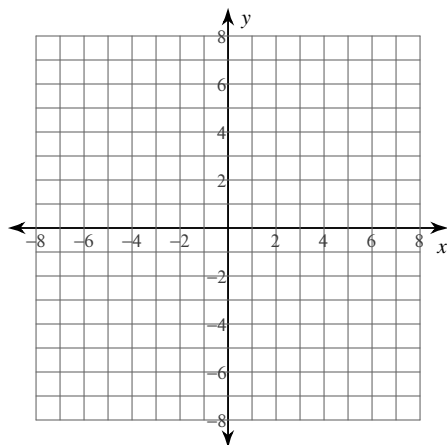
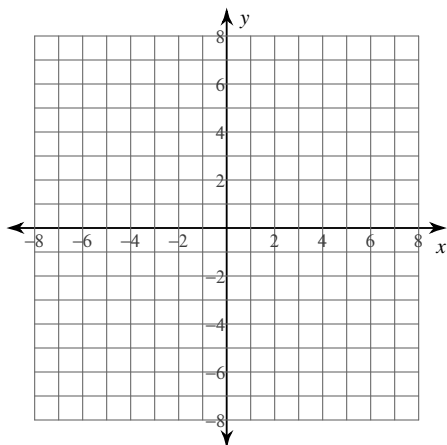
$$41) y = \log_2 (x - 2) - 5$$

$$42) y = \log_3 (x + 2) - 5$$



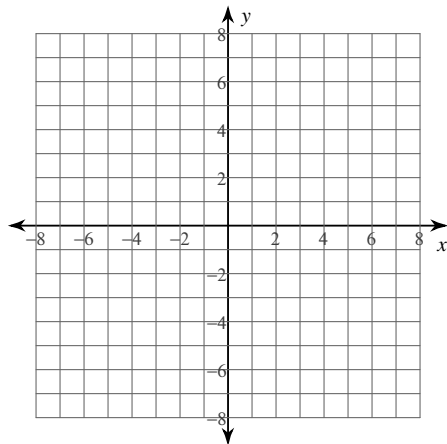
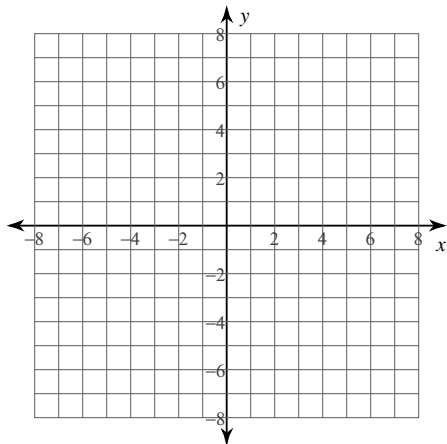
$$43) y = \log_4 (x + 2) - 5$$

$$44) y = \log_3 (x - 3) + 5$$

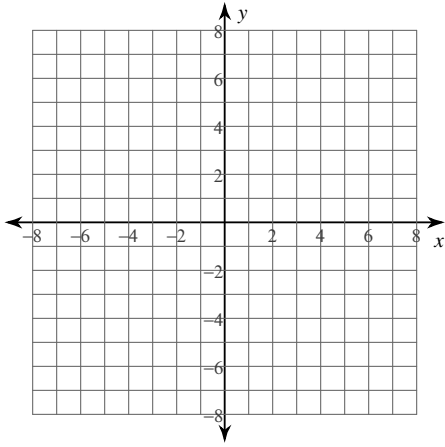


$$45) y = \log_5 (x - 1) - 2$$

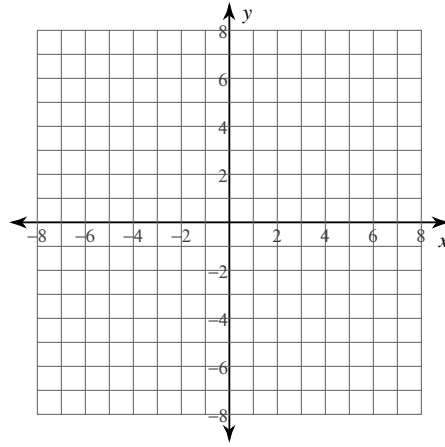
$$46) y = \log_4 (x - 1) - 5$$



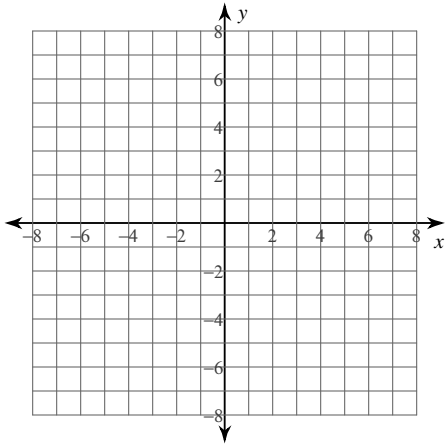
$$47) y = \log_5(x - 1) + 2$$



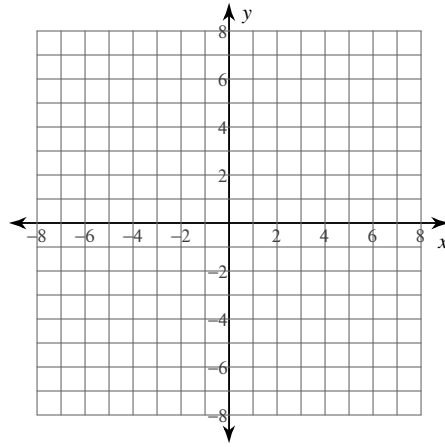
$$48) y = \log_4(x + 5)$$



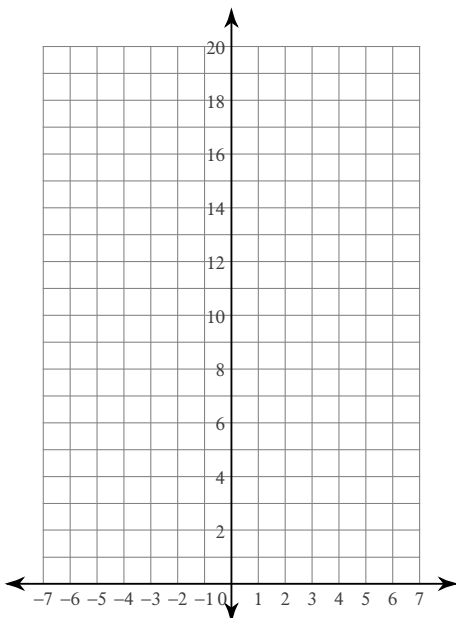
$$49) y = \log_6(x + 6) + 5$$



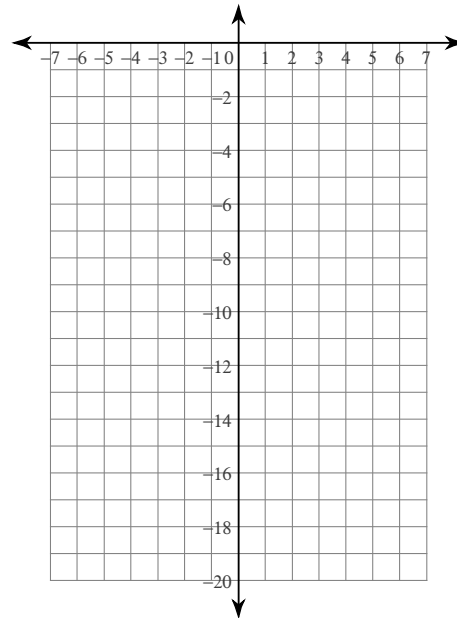
$$50) y = \log_5(x + 1) + 4$$



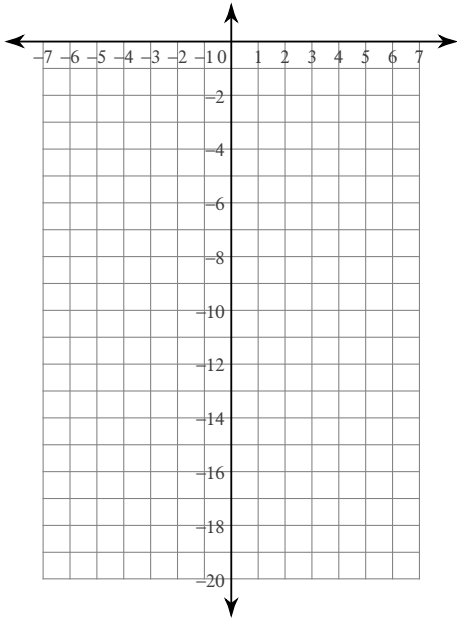
$$51) y = 5 \cdot \left(\frac{1}{2}\right)^x$$



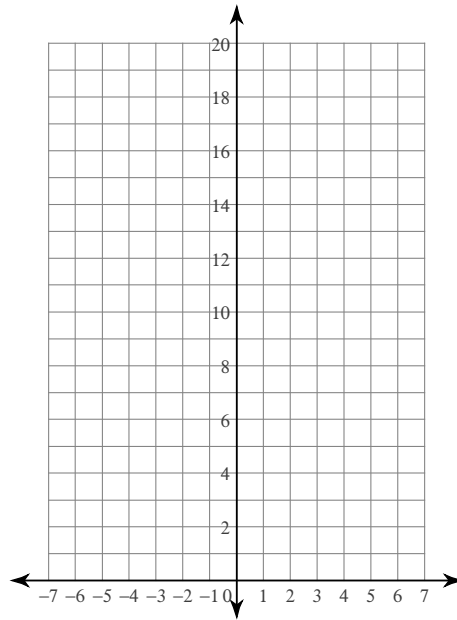
$$52) y = -2 \cdot 2^x$$



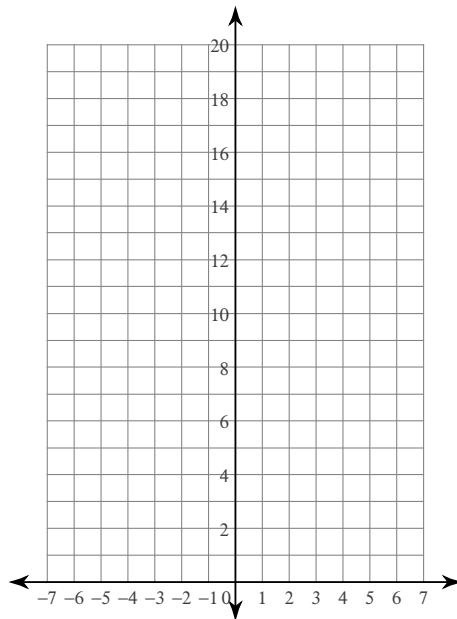
$$53) y = -3 \cdot 2^x$$



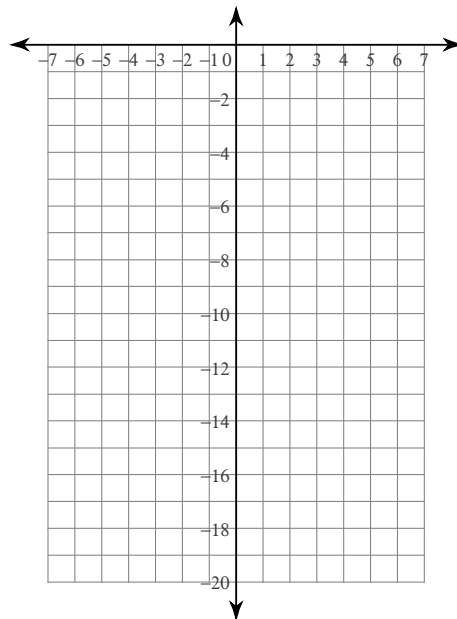
$$54) y = 3 \cdot \left(\frac{1}{2}\right)^x$$



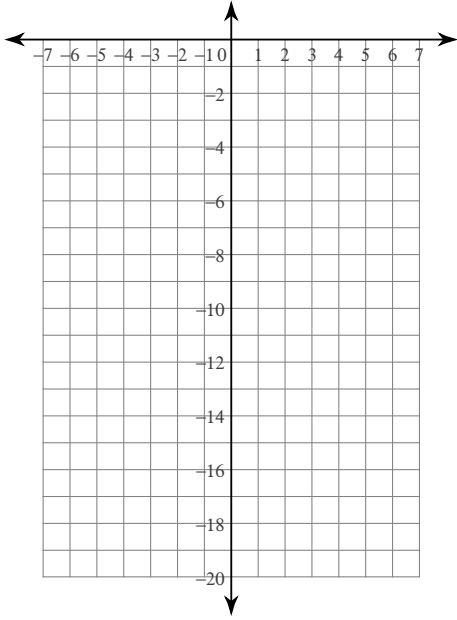
$$55) y = 4 \cdot \left(\frac{1}{2}\right)^x$$



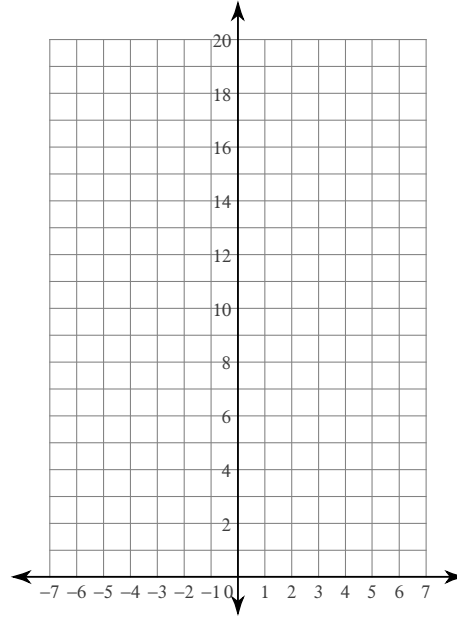
$$56) y = -4 \cdot \left(\frac{1}{2}\right)^x$$



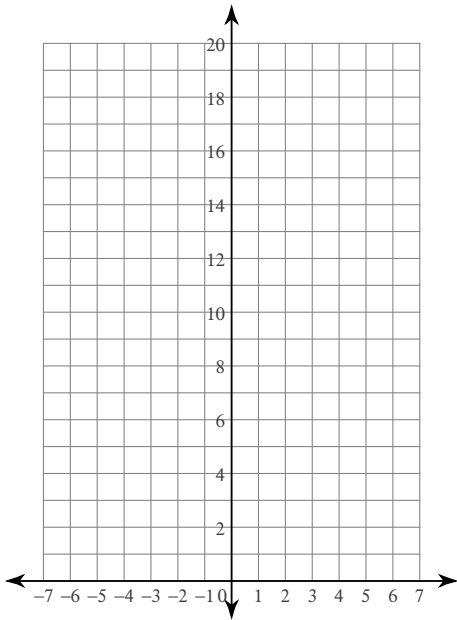
$$57) y = -4 \cdot 2^x$$



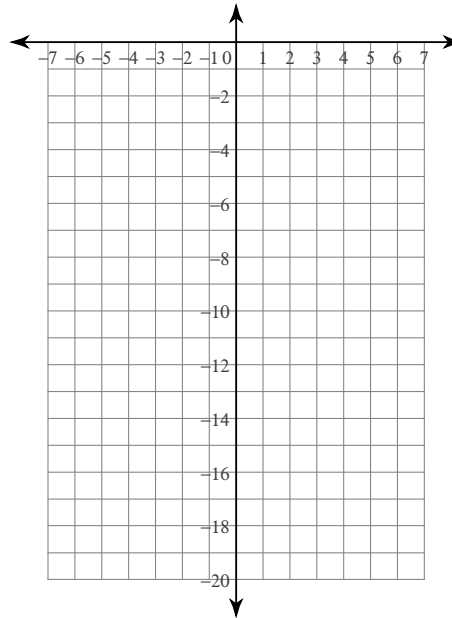
$$58) y = 5 \cdot 2^x$$



$$59) y = \frac{1}{2} \cdot 5^x$$



$$60) y = -\frac{1}{2} \cdot \left(\frac{1}{2}\right)^x$$



Answers to Review Sheet: Exponential and Logarithmic Functions (ID: 1)

1) $6 \log u - 3 \log v$

2) $4 \log_6 u + 4 \log_6 v$

3) $\frac{\log_5 8}{3} + \frac{\log_5 7}{3} + \frac{\log_5 11}{3}$

4) $6 \log_4 u + 5 \log_4 v$

5) $12 \log_3 x - 3 \log_3 y$

6) $\ln(35 \cdot 6^2)$

7) $\log_2(7^3 \cdot 6^4)$

8) $\log_8(yxz^6)$

9) $\log_9 \frac{x^{18}}{y^6}$

10) $\log_8(7^4 \sqrt[3]{6})$

11) $2^5 = 32$

12) $5^3 = 125$

13) $19^{-2} = \frac{1}{361}$

14) $6^3 = 216$

15) $\left(\frac{1}{9}\right)^2 = \frac{1}{81}$

16) $\log_4 16 = 2$

17) $\log_x y = -4$

18) $\log_m n = 3$

19) $\log_{12} y = x$

20) $\log_a b = -7$

21) $y = 6^{\frac{x}{2}}$

22) $y = 4^{-\frac{x}{10}}$

23) $y = -\frac{5^x}{3}$

24) $y = 5^{\frac{x}{3}}$

25) $y = 5^{\frac{x}{3}}$

26) $y = \log_4 4x$

27) $y = \ln 3x$

28) $y = \log_4 2x$

29) $y = \log_3(x - 8)$

30) $y = \log_3(x + 10)$

31) $\{-5\}$

32) $\{1\}$

33) $\{4\}$

34) $\{9\}$

35) $\{0\}$

36) $\{44\}$

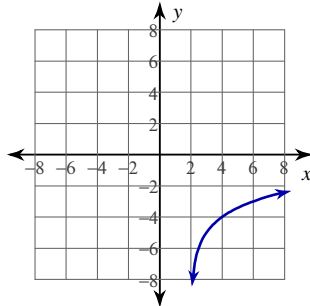
37) $\left\{\frac{61}{4}\right\}$

38) $\{85\}$

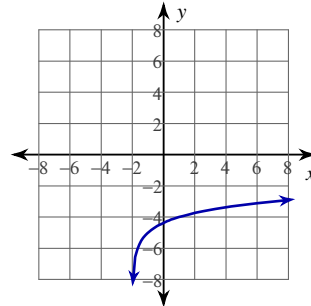
39) $\{-128\}$

40) $\left\{\frac{21}{5}\right\}$

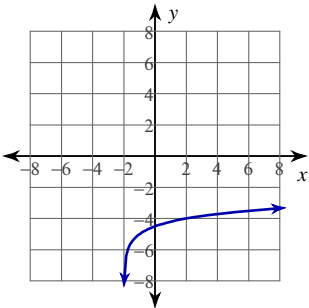
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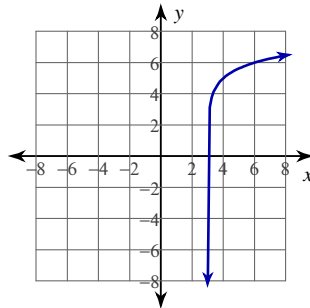
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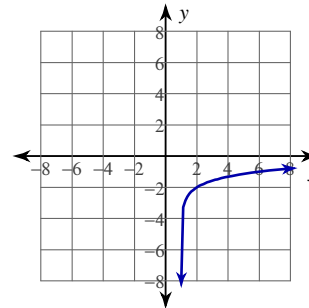
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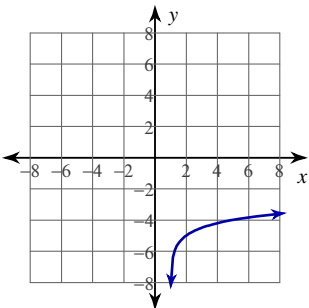
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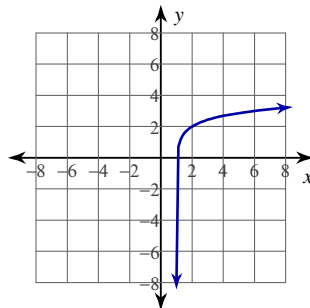
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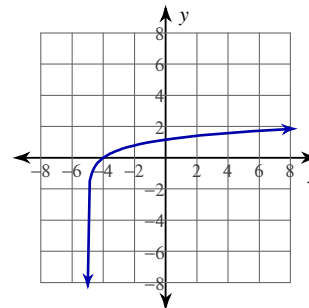
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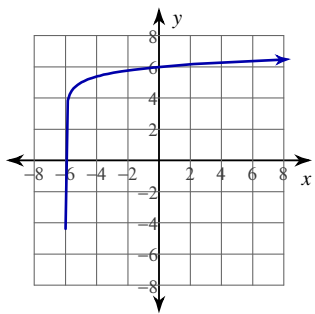
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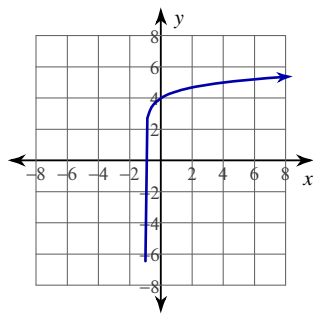
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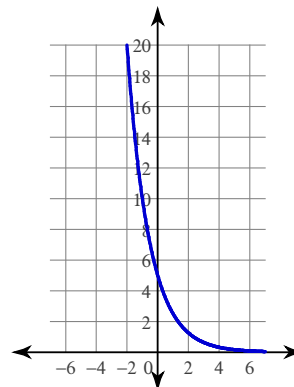
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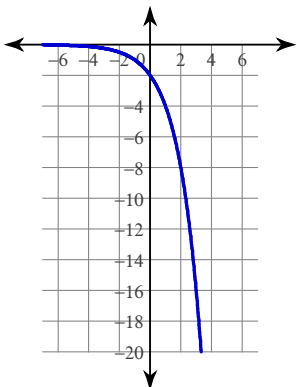
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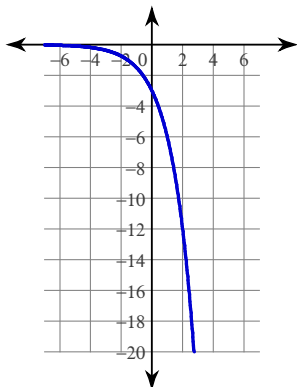
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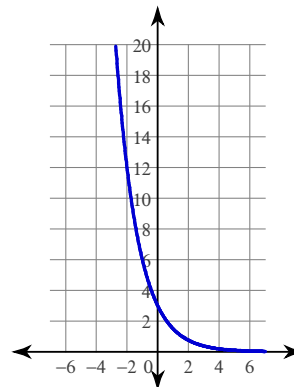
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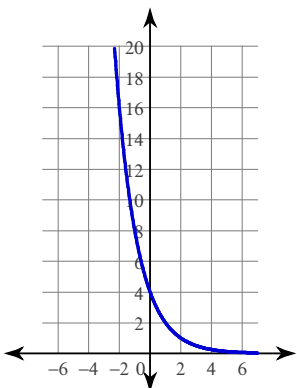
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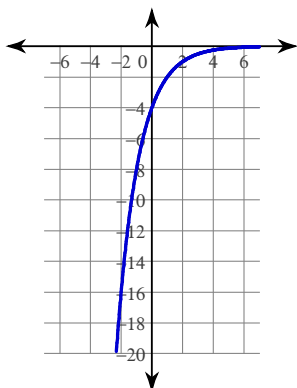
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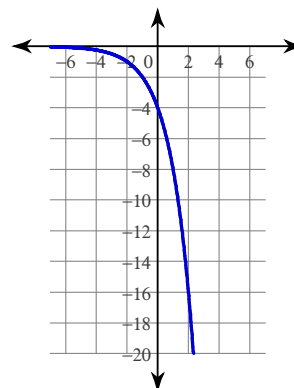
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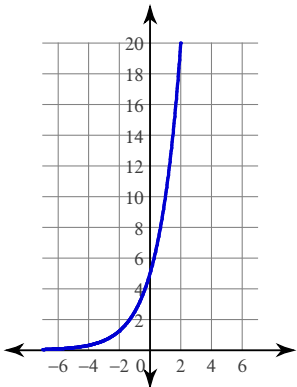
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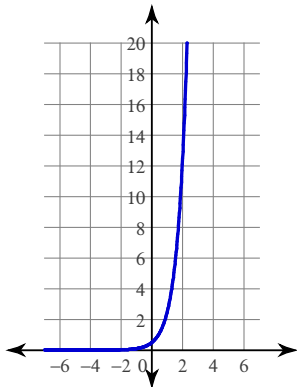
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58)



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