

Homework 10 Solutions

1. Solve:

(a) $\sqrt{2x-5} = 7$

$$2x - 5 = 49$$

$$2x = 54 \Rightarrow x = 27$$

(b) $\sqrt[3]{3x-1} = -2$

$$3x - 1 = -8$$

$$3x = -7 \Rightarrow x = -\frac{7}{3}$$

(c) $\sqrt{2x-5} - 2 = 3$

$$\sqrt{2x-5} = 5$$

$$2x - 5 = 25$$

$$2x = 30 \Rightarrow x = 15$$

(d) $4\sqrt{2x} = 12$

$$\sqrt{2x} = 3$$

$$2x = 9 \Rightarrow x = \frac{9}{2}$$

2. Simplify:

(a) $\sqrt{a^6 b^{10}} = a^3 b^5$

(b) $\sqrt{49a^4 b^{12}} = 7a^2 b^6$

(c) $\sqrt{121x^{14}y^6} = 11x^7 y^3$

(d) $\sqrt{12} - 2\sqrt{3} + \sqrt{75}$

$$= 2\sqrt{3} - 2\sqrt{3} + 5\sqrt{3} = 5\sqrt{3}$$

(e) $8\sqrt{5} - \sqrt{45} - \sqrt{80}$

$$= 8\sqrt{5} - 3\sqrt{5} - 4\sqrt{5} = \sqrt{5}$$

(f) $\frac{\sqrt{y^8}}{\sqrt{x^{12}}}$

$$= \frac{y^4}{x^6}$$

$$\begin{aligned}
 \text{(g)} \quad & \frac{\sqrt[3]{250x^5y^7}}{\sqrt[3]{2x^2y}} \\
 &= \frac{\left(250x^5y^7\right)^{\frac{1}{3}}}{\left(2x^2y\right)^{\frac{1}{3}}} = \left(125x^3y^6\right)^{\frac{1}{3}} = 5xy^2
 \end{aligned}$$