Unit 3 – Literal Equations

Solve for the indicated variable. Show all necessary work.

1. $-3x + b = c$, for x.

$$-3x + b = c$$
$$-b \quad -b$$
$$\frac{-3x}{-3} = \frac{c-b}{-3}$$
$$x = \frac{c-b}{-3}$$

2. $\frac{y+a}{3} = c$, for y.

$$3 \cdot \frac{y+a}{3} = c \cdot 3$$
$$y + a = 3c$$
$$-a \quad -a$$
$$y = 3c - a$$

3. $v = 4 + at$, for a.

$$v = 4 + at$$
$$-4 \quad -4$$
$$\frac{v-4}{t} = \frac{at}{t}$$
$$a = \frac{v-4}{t}$$

4. $I = prt$, for r.

$$\frac{I}{pt} = \frac{prt}{pt}$$
$$r = \frac{I}{pt}$$

5. $d = \frac{1}{2}at^2$, for a.

$$2 \cdot d = \frac{1}{2}at^2 \cdot 2$$
$$\frac{2d}{t^2} = \frac{at^2}{t^2}$$
$$a = \frac{2d}{t^2}$$

6. $c = \frac{3}{4}y + b$, for y.

$$c = \frac{3}{4}y + b$$
$$-b \quad -b$$
$$\frac{4}{3} \cdot (c-b) = \frac{3}{4}y \cdot \frac{4}{3}$$
$$\frac{4}{3}(c-b) = y$$

7. $3x - 4y = 7$, for y.

$$3x - 4y = 7$$
$$-3x \quad -3x$$
$$\frac{-4y}{-4} = \frac{7-3x}{-4}$$
$$y = \frac{7-3x}{-4}$$

8. $\frac{x+y}{a} = c$, for a.

$$a \cdot \frac{x+y}{a} = c \cdot a$$
$$\frac{x+y}{c} = \frac{ac}{c}$$
$$a = \frac{x+y}{c}$$

9. (a) Sara is going to paint a circular piece of wood for the set of her school play. If the area of the wood is 36π, then what is the radius? (Remember: $A = \pi r^2$)

$$A = \pi r^2$$
$$\frac{36\pi}{\pi} = \frac{\pi r^2}{\pi}$$
$$36 = r^2$$
$$r = 6 \text{ units}$$

(b) Using the formula from part (a), represent the radius in terms of A.
Hint: The inverse operation of squaring (x^2) is taking the square root $\sqrt{\ }$

$$\frac{A}{\pi} = \frac{\pi r^2}{\pi}$$
$$\frac{A}{\pi} = r^2$$
$$r = \sqrt{\frac{A}{\pi}}$$