

## 5.3 Practice Problems

Directions: Factor each completely.

1)  $v^2 + 10v + 21$   $\begin{matrix} \times 21 \\ +10 \end{matrix}$

$$(v+7)(v+3)$$

2)  $r^2 - 8r - 20$   $\begin{matrix} \times -20 \\ + -8 \end{matrix}$

$$(r-10)(r+2)$$

3)  $x^2 - 15x + 50$   $\begin{matrix} \times 50 \\ + -15 \end{matrix}$

$$(x-10)(x-5)$$

4)  $20v^2 + 13v + 2$   $\begin{matrix} \times 40 \\ +13 \end{matrix}$   
 $\begin{matrix} \times \\ \times \end{matrix} (20v+8)(20v+5)$

$$(5v+2)(4v+1)$$

5)  $3x^2 + 11x + 6$   $\begin{matrix} \times 18 \\ +11 \end{matrix}$   
 $\begin{matrix} \times \\ \times \end{matrix} (3x+9)(3x+2)$

$$(x+3)(3x+2)$$

6)  $3x^2 + x - 30$   $\begin{matrix} \times -90 \\ +1 \end{matrix}$   
 $\begin{matrix} \times \\ \times \end{matrix} (3x+10)(3x-9)$

$$(3x+10)(x-3)$$

7)  $6r^2 - 11r - 10$   $\begin{matrix} \times -60 \\ + -11 \end{matrix}$   
 $\begin{matrix} \times \\ \times \end{matrix} (6r-15)(6r+4)$

$$(2r-5)(3r+2)$$

8)  $9x^2 + 3x - 20$   $\begin{matrix} \times -180 \\ + 3 \end{matrix}$   
 $\begin{matrix} \times \\ \times \end{matrix} (9x+15)(9x-12)$

$$(3x+5)(3x-4)$$

9)  $9x^2 + 83x + 18$   $\begin{matrix} \times 162 \\ + 83 \end{matrix}$   
 $\begin{matrix} \times \\ \times \end{matrix} (9x+81)(9x+2)$

$$(x+9)(9x+2)$$

Directions: Solve each equation. Sketch it.

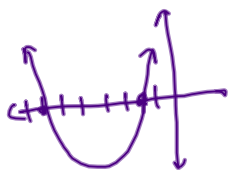
10)  $x^2 + 9x = -14$

$$\begin{array}{r} +14 \quad +14 \\ \hline x^2 + 9x + 14 = 0 \end{array} \quad \begin{array}{l} x+7 \\ +9 \end{array}$$

$$(x+2)(x+7) = 0$$

$$x+2=0 \quad \text{OR} \quad x+7=0$$

$$\boxed{x=-2} \quad \boxed{x=-7}$$



11)  $-n^2 + 48 = -8n$

$$\begin{array}{r} +n^2 - 48 \quad +n^2 - 48 \\ \hline 0 = n^2 - 8n - 48 \end{array} \quad \begin{array}{l} x-48 \\ +8 \end{array}$$

$$0 = (n-12)(n+4)$$

$$0 = n-12 \quad \text{OR} \quad 0 = n+4$$

$$\boxed{12=n} \quad \text{OR} \quad \boxed{-4=n}$$



12)  $5p^2 - 28 = 31p$

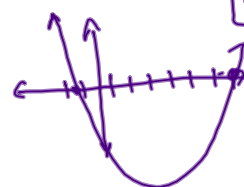
$$\begin{array}{r} -31p \quad -31p \\ \hline 5p^2 - 31p - 28 = 0 \end{array} \quad \begin{array}{l} x-140 \\ +31 \end{array}$$

$$(5p-35)(5p+4) = 0$$

$$(p-7)(5p+4) = 0$$

$$p-7=0 \quad \text{OR} \quad 5p+4=0$$

$$\boxed{p=7} \quad \text{OR} \quad \boxed{p=-\frac{4}{5}}$$



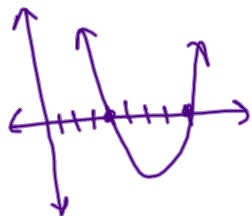
Directions: Find the zeroes. Sketch it.

13)  $f(x) = x^2 - 12x + 32$

$$\begin{array}{r} x32 \\ +12 \\ \hline f(x) = (x-4)(x-8) \end{array}$$

$$0 = x-4 \quad \text{OR} \quad 0 = x-8$$

$$x=4 \quad \text{OR} \quad x=8$$



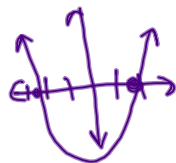
14)  $h(x) = 3x^2 + 2x - 16$

$$\begin{array}{r} x-98 \\ +2 \\ \hline 0 = (3x-6)(3x+8) + 2 \end{array}$$

$$0 = (x-2)(3x+8)$$

$$0 = x-2 \quad \text{OR} \quad 0 = 3x+8$$

$$\boxed{x=2} \quad \text{OR} \quad \boxed{-\frac{8}{3}=x}$$



15)  $g(x) = 16x^2 - 2x - 5$

$$\begin{array}{r} x-80 \\ +2 \\ \hline 0 = (16x-10)(16x+8) + 2 \end{array}$$

$$0 = (8x-5)(2x+1)$$

$$0 = 8x-5 \quad \text{OR} \quad 0 = 2x+1$$

$$5 = 8x \quad \text{OR} \quad -1 = 2x$$

$$\frac{5}{8} = x \quad \text{OR} \quad -\frac{1}{2} = x$$

