

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Learning Goal 1.2**Factor trinomials of the form  $ax^2 + bx + c$ .

Factor these trinomials.

a.  $4 - 20x + 25x^2$

$$\begin{aligned} & 2 \times \sqrt{4 \times 25} \\ &= 2 \times 2 \times 5 \\ &= 20 \end{aligned}$$

$$= (2 - 5x)^2$$

b.  $25 - 36x^2$

$$\begin{aligned} & \sqrt{25} = 5 \\ & \sqrt{36x^2} = 6x \end{aligned}$$

$$= (5 - 6x)(5 + 6x)$$

c.  $5x^4 - 80y^4$   
 $= 5(x^4 - 16y^4)$

$$\begin{aligned} & \sqrt{x^4} = x^2 \\ & \sqrt{16y^4} = 4y^2 \end{aligned}$$

$$\begin{aligned} & = 5(x^2 + 4y^2)(x^2 - 4y^2) \\ & = 5(x^2 + 4y^2)(x + 2y)(x - 2y) \end{aligned}$$

d.  $4x^2 + 12x + 9$

$$\begin{aligned} & 2 \times \sqrt{4 \times 9} \\ &= 2 \times 2 \times 3 \\ &= 12 \end{aligned}$$

$$= (2x + 3)^2$$

e.  $4x^2 + 16xy + 16y^2$   
 $= 4(x^2 + 4xy + 4y^2)$

$$\begin{aligned} & 2 \times \sqrt{1 \times 4} \\ &= 2 \times 1 \times 2 \\ &= 4 \end{aligned}$$

$$= 4(x + 2y)^2$$

f.  $g^2 + 6gh + 9h^2$

$$\begin{aligned} & 2 \times \sqrt{1 \times 9} \\ &= 2 \times 1 \times 3 \\ &= 6 \end{aligned}$$

$$= (g + 3h)^2$$

g.  $18m^2 - 2n^2$   
 $= 2(9m^2 - n^2)$

$$\begin{aligned} & \sqrt{9m^2} = 3m \\ & \sqrt{n^2} = n \end{aligned}$$

$$= 2(3m - n)(3m + n)$$

h.  $64p^6 - 16q^6$   
 $= 16(4p^6 - q^6)$

$$\begin{aligned} & \sqrt{4p^6} = 2p^3 \\ & \sqrt{q^6} = q^3 \end{aligned}$$

$$= 16(2p^3 - q^3)(2p^3 + q^3)$$