

10.2 & 9.4 Review

For 1-4, simplify:

$$1. \sqrt{72}$$

$\sqrt{36 \cdot 2}$
 $6\sqrt{2}$

$$2. \sqrt{99}$$

$\sqrt{9 \cdot 11}$
 $3\sqrt{11}$

$$3. \sqrt{2} \cdot \sqrt{10}$$

$\sqrt{20}$
 $\sqrt{4 \cdot 5}$
 $2\sqrt{5}$

$$4. \sqrt{5} \cdot \sqrt{60}$$

$\sqrt{300}$
 $\sqrt{100 \cdot 3}$
 $10\sqrt{3}$

$$5. 3\sqrt{5} \cdot \sqrt{5}$$

$3\sqrt{25}$
 $3(5)$
 15

$$6. \sqrt{6} \cdot 4\sqrt{24}$$

$\sqrt{6} \cdot 4(2\sqrt{6})$
 $8\sqrt{36}$
 $8(6)$
 48

$$7. 2\sqrt{3} \cdot 3\sqrt{15}$$

$6\sqrt{45}$
 $6(3\sqrt{5})$
 $18\sqrt{5}$

$$8. \sqrt{16b^4}$$

$4b^2$

$$9. \sqrt{81a^2d^4}$$

$9ad^2$

$$10. \sqrt{40x^4y^5}$$

$2x^2y^2\sqrt{10y}$

$$11. \sqrt{\frac{q}{12}}$$

$\frac{\sqrt{q}}{\sqrt{12}} = \frac{\sqrt{q}(\sqrt{3})}{2\sqrt{3}(\sqrt{3})}$
 $\frac{\sqrt{3q}}{2(3)} = \frac{\sqrt{3q}}{6}$

$$12. \sqrt{\frac{4h}{5}}$$

$\frac{2\sqrt{h}}{\sqrt{5}} \cdot \frac{(\sqrt{5})}{(\sqrt{5})}$

$$13. \sqrt{\frac{12}{b^2}}$$

$\frac{2\sqrt{3}}{b}$

$$14. \sqrt{\frac{45}{4m^4}}$$

$\frac{3\sqrt{5}}{2m^2}$

$$\frac{2\sqrt{5h}}{5}$$

Solve each equation by completing the square.

$$15. x^2 + 12x + 21 = 10$$

$x^2 + 12x + \underline{36} = -11 + \underline{36}$
 $(x+6)^2 = 25$
 $x = -6 \pm 5$

$$-11 + 36$$

$$16. 2x^2 + 20x = -2$$

$2(x^2 + 10x + \underline{25}) = -2 + \underline{50}$
 $x^2 + 10x + \underline{25} = -1 + \underline{25}$
 $(x+5)^2 = 24$

$$x = -5 \pm 2\sqrt{6}$$

$$17. x^2 - 2x = 15$$

$x^2 - 2x + \underline{1} = 15 + \underline{1}$
 $(x-1)^2 = 16$

$$x = 1 \pm 4$$

$$5, -3$$

Convert from standard form to vertex form:

$$18. y = x^2 - 4x - 2$$

$y = x^2 - 4x + \underline{4} - 2 + \underline{4}$
 $y = (x-2)^2 + 2$

$$19. y = x^2 - 8x + 9$$

$$y = x^2 - 8x + \underline{16} + 9 - \underline{16}$$

$y = (x-4)^2 + 25$