**Chapter 2 Review**

**2.1 Angles in Standard Position :**

 **1.** Sketch each angle in standard position. State which quadrant the angle terminates in and

 the measure of the reference angle.

  **a)** 35$°$ **b)** 165$°$ **c)** 216$°$

 quadrant \_\_\_\_\_\_\_ quadrant\_\_\_\_\_\_\_ quadrant\_\_\_\_\_\_\_

 $θ\_{R}$ = \_\_\_\_\_\_\_ $θ\_{R}$ = \_\_\_\_\_\_\_ $θ\_{R}$ = \_\_\_\_\_\_\_

 **2.** Determine the exact value of the following ratios without using technology.

 **a)** cos 180$°$ = \_\_\_\_\_\_\_ **b)** tan 210$°$ + \_\_\_\_\_\_\_ **c)** sin 315$°$ = \_\_\_\_\_\_\_

**2.2 Trigonometric Ratios of Any Angle**

 **3.** A point P (-4,5) lies on the terminal arm of an angle $θ$ in standard position. Determine the

 exact trigonometric ratios for sin $θ$, cos $θ$, and tan $θ$

**4.** Suppose $θ$ is an angle in standard position with terminal arm in quadrant **II** and sin $θ$ = $\frac{15}{17}$.

Determine the exact values of the other two primary trigonometric ratios.

 **5.** Solve for $θ$, 0$°$ $\leq θ$ $<$ 360$°$.

 **a)** cos $θ$ = 0.5877 **b)** sin $θ$ = -$\frac{\sqrt{3}}{2}$

**2.3 The Sine Law:**

 **6.** Find the individual side or angle.

 **a)** $∠$B = \_\_\_\_\_\_\_ **b)** side *b* = \_\_\_\_\_\_\_

 

 **7.** Determine how many $∆$ ABCs satisfy the following conditions.

 **a)** $∠$A = 69$°$, *a* = 10.1 cm, and *b* = 11.4

 **b)** $∠$A = 28$°$, *a* = 4, and *b* = 6

**2.4 The Cosine Law:**

 **8.** Find the indicated side or angle.

 **a)** side *c* = \_\_\_\_\_\_\_ **b)** $∠$A = \_\_\_\_\_\_\_

 

 **Chapter 3 Review**

**3.1 Investigating Quadratic functions in Vertex Form:**

 **1.** For each of the following, determine the number of *x* intercepts, the equation of the axis of

 symmetry, and the domain and range.

  **a)** *y* = -2 (*x* + 5)2 + 6 **b)** *y* = 5(*x* – 8)2

1. For each of the following, determine the coordinates of the vertex and whether the graph

Has a maximum or minimum value.

**a)** *y* = -(*x* – 3)2 – 7 **b)** *y* = 0.5(*x* + 11)2 + 8

1. Sketch each of the following functions. Label the vertex and axis of symmetry.

**a)** *y* = -4(*x* + 1)2 **b)** *y* = $\frac{1}{4}$(*x* + 2)2 – 3

 

1. Suppose a sculptor wants to create a parabolic arch wit a height of 5 m and a width at the

base of 8 m.

**a)** Determine the quadratic function that represents the arch if the vertex of the parabola

 is at the origin.

 **b)** Determine the quadratic function that represents the arch if the origin is at the lower

 left end of the arch.

 **c)** Explain the similarities and differences between your two functions.

**3.2 Investigating Quadratic Function in Standard Form:**

 **5.** State the *x*-intercepts and *y*-intercept for each function

 **a)** *y* = *x*2 + 2*x* – 8 **b)** *y* = *x*2 + 10*x* + 9

1. Determine the *x*-coordinate of the vertex of each of the quadratic functions.

**a)** *y* = *x*2 + 2*x* – 8 **b)** *y* = *x*2 + 10*x* + 9

1. State the equation of the axis of symmetry and the direction of opening for each quadratic

function.

**a)** *y* = -0.5*x*2 – 5*x* + 2 **b)** *y* = 6*x*2 – 8*x* – 11

**3.3 Completing the Square:**

 **8.** Write each function in vertex form. State the domain and range.

 **a)** *y* = *x*2 + 6*x* + 15 **b)** *y* = -3*x*2 – 36*x* – 100

 **c)** *y* = 2*x*2 – 16*x* + 22 **d)** *y* = $\frac{1}{2}$*x*2 – *x* + 3

 **9.** The profit, *p*, earned from the sale of a particular product by a business is given by

 *p*(*d*) = -0.25*d*2 + 5*d* + 80, where *d* is the number of days the product has been for sale.

 **a)** Determine the vertex of the profit function.

 **b)** Explain what the vertex means in the context of this problem.

 **10.** A student club is planning a fundraising car wash. Last year thy charged $1o per vehicle

 and washed 120 vehicles. They would like to earn more money this year. For every $1

 increase in price, they know they will wash 5 fewer vehicles.

 **a)** Write a quadratic function to model this situation using *v* as the number of vehicles and

 *r* as the revenue.

 **b)** Determine the best price to charge for the car wash and the revenue expected at that

 price.

**Chapter 4 Review**

**4.1 Graphical Solutions of Quadratic Equations:**

 **1.** Use the graph to state the roots of each equation.

 **a)** b)

 

 **2.** Explain which properties dictate the

 number of *x*-intercepts for each of the

 following. Then, sketch a sample of each

 type of graph on the same set of axes.

 **a)** type distinct real roots. **b)** one real root.

 **c)** no real roots

 **3.** Graph the following. From your graph, state the roots to the nearest tenth.

 **a)** $y = x^{2} – 10x + 20$ **b)** $y=0.5\left(x-11\right)^{2}-3$

 

 **c)** $y = -5x^{2} + 16x - 2$



**4.2 Factoring Quadratic Equations:**

 **4.** Factor each of the following completely.

 **a)** (*a* + 5)2 – 49(*b* – 9)2 **b)** (*x* – 6)2 + 10(*x* – 6) + 9

 **c)** $\frac{9m^{2}}{16}- \frac{100n^{2}}{81}$

 **5.** Solve each of the following equations by factoring. Verify your answers.

 **a)** *x*2 + 6*x* + 8 = 0 **b)** 3*x*2 – 5*x* + 2 = 0

 **c)** 4*x*2 + 27 = 24*x* **d)** 36*x*2 – 81 = 0

 **6.** One side of an envelope is 3 inches longer than the other side. The area of the envelope is

 108 in.2. Determine the dimensions of the envelope. (Sketch a diagram to help you with

 your solution.)

**4.3 Solving Quadratic Equations By Completing the Square:**

 **7.** Solve each of the following. State your answers as exact values.

 **a)** *x*2 = 169 **b)** (*x* + 7)2 = 121

 **c)** (*x* – 12)2 = 80 **d)** -3(*x* + 1)2 = -48

 **8.** Solve each of the following by completing the square. State you answers as exact values

 and as approximations to the nearest tenth.

 **a)** *x*2 + 8*x* = 7

 **b)** 2*x*2 – 20*x* + 14 = 0

 **9.** The profit, *p*, earned from the sale of a particular product by a business is given by

 *p*(*d*) = -0.25*d*2 + 5*d* + 80, where *d* is the number of days the product has been for sale.

 Solve this equation by completing the square to determine the last day on which the product

 Will be profitable.

**4.4 The Quadratic Formula:**

 **10.** Use the discriminant to decide the nature of the roots for

 each of the following.

 **a)** 2*x*2 + 5*x* = 8

 **b)** *x*2 = *x* + 12

 **c)** 16*x*2 + 49 = -56*x*

 **d)** 7*x*2 = 3*x* - 2

 **11.** Use the quadratic formula to solve each of the following. State your answers as exact values

 and as approximations to the nearest tenth.

 **a)** *x*2 + 10 = 10*x*

 **b)** 5*x*2 = 8 – 2*x*

**12.** Solve each of the following using an algebraic method. Explain your choice of method.

 **a)** *x*2 + 4*x* = 21

 **b)** 5*x*2 – 13*x* – 6 = 0

 **c)** 2*x*2 + 9*x* = -3