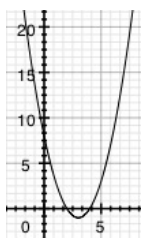**Self-Test A:**

1) Answer: $x = 16$, $y = -37$, $z = 9$; or $(16, -37, 9)$
Section 3.6

2) $y = x^2 - 6x + 8$

  a) $y = (x-3)^2 - 1$ so the vertex is $(3, -1)$

  b) x-intercepts $(2, 0)$ and $(4, 0)$; y-intercept $(0, 8)$

  c)

sections 7.4-7.5

3) Partial solution (see section 9.1): Complete the square in y to put it in standard form (the square in x is already complete)
$x^2 + (y-2)^2 = 9$
The center is $(0, 2)$ and the radius is 3.

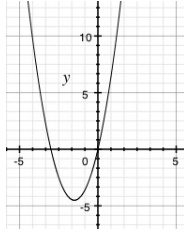**4)** $x = -1 + \frac{\sqrt{30}}{3}$ or $x = -1 - \frac{\sqrt{30}}{3}$

5) Solutions: $(3\sqrt{2}, \sqrt{2})$, $(-3\sqrt{2}, \sqrt{2})$, $(3\sqrt{2}, -\sqrt{2})$, $(-3\sqrt{2}, -\sqrt{2})$

Self-Test B: allow 50 minutes.

1) $y = 2x^2 + 6x$

    a) $y = 2(x + \frac{3}{2})^2 - \frac{9}{2}$ so the vertex is $(-\frac{3}{2}, -\frac{9}{2})$

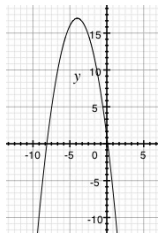   **b)** x-intercepts $(0, 0)$ and $(-3, 0)$; y-intercept $(0, 0)$

    c)

2) $y = -x^2 - 8x + 1$

    a) $y = -(x + 4)^2 + 17$ so the vertex is $(-4, 17)$

    b) x-intercepts $(-4 \pm \sqrt{17}, 0)$; y-intercept $(0, 1)$

    c)

3) Let $(0, 4)$ be the center of a circle that passes through the point $(-2, 5)$. (Section 9.1)

    a) The radius is the distance between the center and a point on the circle. $r = \sqrt{(0 - (-2))^2 + (4 - 5)^2} = \sqrt{5}$

    b) $x^2 + (y + 2)^2 = 5$

4) $x = -2 \pm i\sqrt{5}$

5) Solutions: $(1, 1)$, $(-2, 7)$