3-5 Reteach to Build Understanding

Zeros of Polynomial Functions

1. For the polynomial $x^3 - 36x < 0$, find:

   a. Degree of the polynomial:

   b. End behavior: $x \to \infty$, $y \to \infty$ and $x \to$ _____ , $y \to$

   c. Factor:

   $$f(x) = x^3 - 36x$$
   $$0 = x(x^2 - 36)$$

   d. The zeros are at:

   e. Test values of x between the zeros to determine whether the function is positive or negative.

   $$f(x) = x^3 - 36x \qquad x = 7$$

2. Tavon solved the following $f(x) = x^3 - 3x^2 - 54x$. Find his errors and correct them. Then, create a positive/negative chart like those seen above.

   a. The degree of the polynomial is 2.

   b. End behavior: $x \to \infty$, $y \to \infty$ and $x \to -\infty$, $y \to -\infty$

   c. Zeros are at 0, 9 and -6.

3. Solve the inequality $x^4 - 25x^2 < 0$.

   a. Degree of the polynomial:

   b. End behavior: $x \to$ _____ , $y \to \infty$ and $x \to -\infty$, $y \to$

   c. Find the zeros using factoring or synthetic division:

   $$f(x) = x^4 - 25x^2$$
   $$= \quad (x^2 - 25)$$

   The zeros are at: