

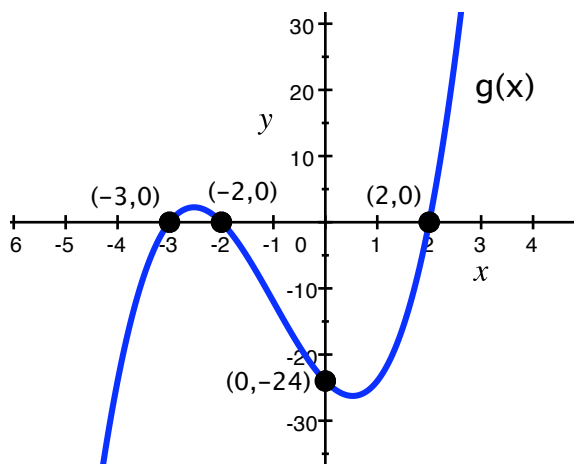
Math 111 Quiz #9 Answers

1. In the long-run, $p(x)$ will look like $-8x^5$. So, as $x \rightarrow \infty$, $p(x) \rightarrow -\infty$.

2. Since $g(x)$ factors further into $g(x) = 2(x+3)(x+2)(x-2)$, we have the following x -intercepts: $(-3, 0)$, $(-2, 0)$, $(2, 0)$

The y -intercept is given by $(0, -24)$. (Plug in $x = 0$ into the function.)

If you multiplied this out, you would get a leading term of $2x^3$, which gives us a general shape of the function. So, the graph will look like the following:



3. (a) Note that $f(x) = \frac{2x-8}{x^2+5x} = \frac{2(x-4)}{x(x+5)}$, which does not simplify.

To find the x -intercepts, we can look at where the numerator will equal 0: $2x - 8 = 0 \Rightarrow x = 4$.
So, the x -intercept is $(4, 0)$.

To find the y -intercept, we can try to plug in $x = 0$. Since $f(0)$ is undefined at $x = 0$, there is no y -intercept.

(b) Since the degree of the denominator is greater than the degree of the numerator, $f(x)$ does have a horizontal asymptote and the equation is $y = 0$.

(c) Given that $f(x) = \frac{2(x-4)}{x(x+5)}$, there are two vertical asymptotes: $x = 0, x = -5$
(Look at where the denominator equals 0.)

4. You can use either equation regarding simple interest for this:

- Using $I = Prt$: $I = 2000, P = 4000, r = ?, t = 2$
 $\Rightarrow 2000 = 4000r(2) \Rightarrow r = 0.25$ or 25%

- Using $A = P(1 + rt)$: $A = 6000, P = 4000, r = ?, t = 2$
 $\Rightarrow 6000 = 4000(1 + r(2)) \Rightarrow r = 0.25$ or 25%