

Math 111
Exam #1 Review

Please show all work to receive partial credit.

Domain and function evaluations:

1) Let:

$$f(x) = \frac{1}{x^2 - 16}$$

Domain =

$$f(4) =$$

$$f(0) =$$

2) Let:

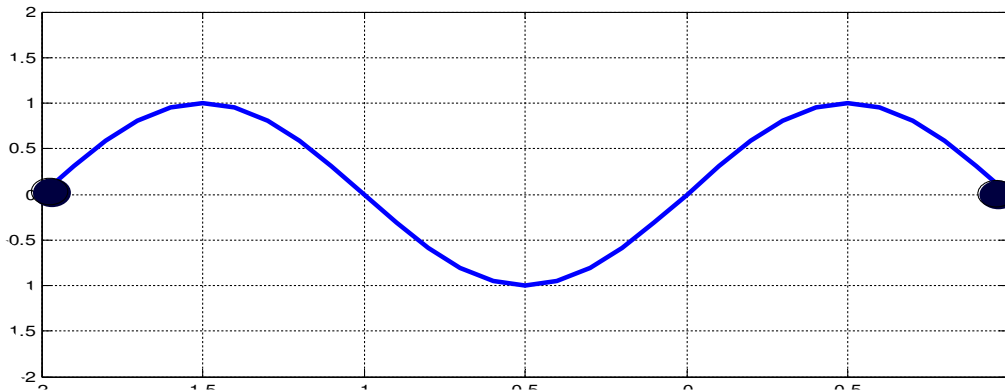
$$f(x) = \sqrt{-2x - 1}$$

Domain =

$$f(-4) =$$

$$f(0) =$$

3) Consider the following graph of $f(x)$



What is the range of $f(x)$?

What is the domain of $f(x)$?

Evaluate $f(0)$:

The Difference Quotient:

4) Let $f(x) = 5x + 1$

a) Determine $f(x+h)$

b) Find the difference quotient of $f(x)$ and simplify the results.

Linear Functions and Models:

5) Write a formula for a linear function f whose graph satisfies the following conditions:
passing through the points $(-6, 3)$ and $(2, 1)$

Graph the linear functions by hand: (identify the slope and y-intercept)

6) Let $y = -3x + 4$.

a) find an equation of the line that is parallel to the line given above and passes through the point $(-1, 5)$

b) find an equation of the line that is perpendicular to the line given and has y- intercept $(0, 3)$

7) The value of a house in 1995 was \$180000 and in 2005 it was appraised for \$245000.

a) Find a linear function V that approximates the value of the house during year x .

b) use your function V to estimate the year when the house was worth \$219000

Linear Inequalities

8) Solve the linear inequalities for x . Express the solution using interval notation.

a) $\frac{3x}{4} \leq x - \frac{x+2}{2}$

b) $\frac{1}{3} \leq \frac{1-2x}{3} \leq \frac{2}{3}$

Piecewise Functions

9) Solve the following absolute value equations

a) $|-2x|=4$

b) $|2-3x|=5$

c) $|3-4x|=-3$

10) Solve the following absolute value inequality:

a) $|3x-1| < 8$

b) $|3x-1| > 8$

11) Consider the following cell phone plan:

Qwest Wireless(R) Cross Country 500

400 minutes

\$0.20 per additional minute

\$39.99 a month for one phone

\$14.99 per month for each additional phone

a) Construct a piecewise function to describe your monthly bill as a function of minutes talked assuming you have one extra phone

b) Determine your monthly bill if you talk 400 minutes or 500 minutes

