



## EXAM 3 REVIEW OVER CHAPTER 5

**Pr 1.** Convert  $\sqrt{y} = e^{3x+5}$  into logarithmic form.

**Pr 2.** Expand  $\log_2 \left( \frac{2w^5x^3}{\sqrt{yz}} \right)$  into as many logarithms as possible.

**Pr 3.** Solve  $2^{3x+5} = 3^{2x-1}$  for  $x$ .

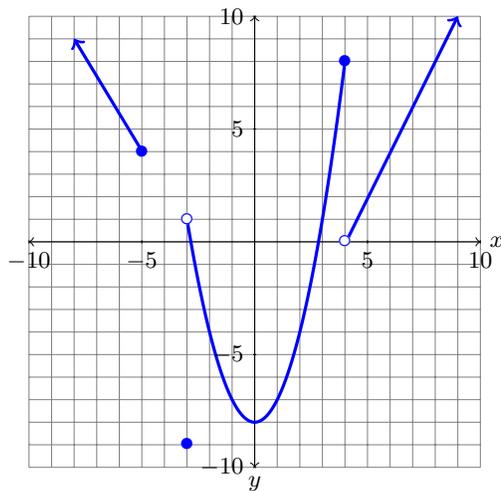
**Pr 4.** Solve  $\ln(x - 3) + \ln(3x + 1) = \ln(x + 9)$ .

- Pr 5.** Suppose that 3 years ago you deposited \$2000 into a savings account which earns annual interest at a rate of 0.35%, compounded continuously.
- (a) How much money is in the account today, assuming that no other deposits have been made?

- (b) How much longer must the money remain in the account in order for the total amount to reach \$5000, assuming no other deposits will be made?

**Pr 6.** Find the domain of  $f(x) = \log_3(2 - 5x)$ .

**Pr 7.** State the domain and range of the function given in the graph below, using interval notation. Then determine if the function is one-to-one.



**Pr 8.** Let  $f(x) = \frac{x-2}{x+3}$ , and let  $g(x) = \frac{x+5}{x-2}$ , and  $h(x) = x^2$ . Compute and simplify the following:

(a)  $f(x) + g(x)$

(b)  $f(x)h(x)$

(c)  $f(x) \div g(x)$

(d)  $(g \circ h)(x)$ .

(e)  $(h \circ f)(x)$ .

- Pr 9.** Determine if the given function is a polynomial function. If the answer is yes, state the degree, leading coefficient, and constant term. Also, state the domain of the function, using interval notation.

$$f(x) = 2^5 - 17x^7 + 12 - 42x^2.$$

- Pr 10.** The price-demand function (in dollars) for a particular item is given by  $p(x) = -0.06x + 56$ , where  $x$  is the number of items. The company who produces these items has a production cost of \$5 per item and fixed costs of \$150. Determine the maximum profit for the company from the sales of this item.

**Pr 11.** State the domain of the following rational function. Then classify each each domain restriction as the location of a hole or vertical asymptote on the graph of the function.  $f(x) = \frac{(3x - 2)(2x - 5)(x - 5)}{(x - 5)(2x + 5)(x + 1)}$

**Pr 12.** Compute and simplify the difference quotient of  $g(x) = \frac{2x}{3x - 1}$ .

**Pr 13.** State the domain of  $f(x) = \frac{(3x-2)\sqrt{1-2x}}{(x+5)^{4/7}}$  using interval notation.

**Pr 14.** Convert  $f(x) = 2(x+4)^{3/11}$  into radical notation.

**Pr 15.** Let  $f(x) = \begin{cases} \frac{1}{(x+5)(x-3)} & x < -3 \\ \ln(12 - 2x) & x \geq 3 \end{cases}$ . Compute the following values of  $f(x)$ .

(a)  $f(-10) =$

(b)  $f(-5) =$

(c)  $f(-3) =$

(d)  $f(3) =$

(e)  $f(10) =$

**Pr 16.** Express  $f(x) = 2|4 - 2x|$  as a piecewise-defined function.

**Pr 17.** State the domain of  $h(x) = 2\sqrt{3-4x}$  using interval notation

**Pr 18.** Algebraically solve:  $27 \cdot 9^{2x-1} = 81$ .