

MA108R Exam1 Review
Fall 2008

1. a) Evaluate: $|3.1 - \pi|$. Your answer should be exact.
b) Write in scientific notation: 5,620,000,000
c) Evaluate (show work for each step):

$$\frac{2 \cdot \frac{24}{4} + 3}{\frac{30}{5} - 1}$$

2. Perform the indicated operations (and combine like terms):
 - a) $(-25x^2 + 15y^2 + 6xy) - (17x^2 + 9y^2 - 14xy)$
 - b) $-2(3x^2y + 4x^3y^2 - x^4y^3) + 5(2x^2y - 3x^4y^3)$
3. Solve the following equations for x .

a)

$$\frac{5}{2}x + 4 = \frac{1}{2}x - 2$$

b)

$$\frac{x + 3}{2} = \frac{2x - 2}{5} - 2$$

4. Solve the equation

$$S = 2\pi r^2 + 2\pi r h$$

for the variable h .

5. Solve the following word problems, showing all work (including defining your variable).
 - a) A nurse must dilute a 50-milliliter solution which is 80% medicine. If the solution is to be 40% medicine, how much water must be added?
 - b) Mark can paint a fence in 6 hours. Sarah can paint the same fence in 5 hours. How long will it take them to paint the fence working together?
6. Determine and graph the solution set (use interval notation):

$$-2(x - 1) \leq 3(2x + 6)$$

7. Simplify and combine like radicals:

$$\sqrt{48} - \sqrt{\frac{1}{3}}$$

8. Solve the following power equation:

$$4x^5 + 128 = 0$$

9. The horsepower required to propel a ship at a desired speed varies directly as the square of the speed. For one particular ship, 31.5 horsepower is required to travel at a speed of 3 knots. What is the variation equation?

10. Use properties of exponents to simplify:

a)

$$\frac{b^5}{b^{-6}}$$

b)

$$3a^{-2}a^3$$

11. Perform the indicated operation:

a)

$$(x^2 - 2x)(2x^2 - 3x + 4)$$

b)

$$(6y + 2z^3)^2$$