

Math 46 Practice Test 4

1. Simplify:

a.  $(2x - 9)(2x + 9)$

b.  $(3s^2 - 2r)^2$

c.  $\frac{-4y^{-6}}{(2y^4)^3 \cdot y^{-3}}$

d.  $\left(\frac{3x^{-2}y^2}{6x^{-4}y}\right)^{-2}$

e.  $\frac{4y^2 - 2y - 3}{-2y}$

f.  $\frac{-4x^3 + 5x^2 + x - 3}{x - 1}$

2. Write in scientific notation: 98,000,000,000

3. Write in standard notation:  $3.41 \times 10^{-7}$

4. Use synthetic division to find:  $\frac{x^5 - 1}{x + 1}$

5. Factor completely:

a.  $10x^3y^3 - 15x^4y^2$

b.  $xy - 2yz + 5x - 10z$

c.  $x^2 - 11xy + 30y^2$

d.  $3xy^2 - 6xy - 45x$

e.  $20y^2 + 27y - 8$

f.  $16x^2 - 40x + 25$

g.  $8x^3 + y^3$

h.  $z^2 - 121$

6. Solve:

a.  $y^2 - 5y = 24$

b.  $3x^2 - 6x - 9 = 0$

7. Find the length of the shorter leg of a right triangle if the longer leg is 4 inches more than the shorter leg, and the hypotenuse is 8 inches longer than the shorter leg.

8. Simplify:

a.  $\frac{-8a^3b^4}{16a^5b}$

b.  $\frac{3x^2 - 5x - 2}{6x^3 + 2x^2 + 3x + 1}$