

Test #3

Directions: Please show all your work since partial credit is given. Answers without the necessary work will receive no credit. And remember, have fun!

1. Find the greatest common factor (*GCF*) of each list of terms.

a) $60z^4, 70z^8, -90z^5$

b) $12m^3n^4, 18m^5n^3, 36m^8n^2$

2. Factor by *grouping*.

a) $7ax + 28x + a + 4$

b) $t^3 + 2t^2 - 3t - 6$

3. The length of the hypotenuse of a *right triangle* is 3 meters more than twice the length of the shorter leg. The longer leg is 7 meters longer than the shorter leg.

a) Let x be the length of the short leg. Draw and label a picture in terms of x .

b) Find the length of the short leg. _____

4. Factor the following polynomials completely.

a) $100n^2r^2 + 30nr^3 - 50n^2r$

b) $x^2 + 10x - 24$ _____

c) $-3y^2 + 21y - 18$ _____

d) $6q^2 - 7q - 5$ _____

e) $8a^3 + 27$ _____

f) $w^2 + 400$ _____

g) $9x^2 + 30xy + 25y^2$ _____ **h)** $a^4 - 625$ _____

5. *Solve* the following equations.

a) $x^2 - x - 56 = 0$ _____

b) $49z^2 - 4 = 0$ _____

c) $p^2 = -7p$ _____

d) $t(t+2) = 80$ _____

e) $4p^2 + 40 = 26p$ _____

f) $(2x + 7)(x^2 + 2x - 3) = 0$ _____

6. Find the value of $\frac{5c - 2}{2c^2 - 7c - 15}$ for the following values of c .

a) $c = -2$ _____

b) $c = 5$ _____

7. Find any values for which $\frac{x + 5}{2x^2 + 6x - 20}$ is *undefined*. _____

8. Simplify each of the following *rational expressions*. Write your answers in lowest terms.

a) $\frac{w^2 - 1}{w - 1}$ _____

b) $\frac{c^2 + 9c + 20}{5c - 10} \cdot \frac{-10c + 20}{c^2 - 25}$ _____

c) $\frac{9x^2}{3x - 4} \div \frac{6x^3}{8 - 6x}$ _____

d) $\frac{x^2 + 12x + 27}{x^2 + 6x - 7} \cdot \frac{x^2 - 13x + 12}{x^2 + 16x + 63}$
