Math 990 Factoring Practice Problem Set

Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Factor out the greatest common factor.

1) $60m^9 - 18m^5 - 18m^3$

2) $72x^7y^8 + 84x^2y^5 + 60x^4y^2$

3) $3x(6x - 5) + 4(6x - 5)$

4) $t(5 - m) + s(5 - m)$

Factor completely. If the polynomial cannot be factored, write prime.

5) $x^2 + 5x - 66$

6) $s^2 + 6s + 9$

7) $x^2 + 83x + 84$

Factor completely.

8) $9x^2 - 9x - 54$

9) $5x^6 + 15x^5 - 140x^4$

10) $x^2 + 9xy + 20y^2$

11) $p^5q^2 - 4p^4q^3 - 32p^3q^4$

Factor the binomial completely. If it is prime, say so.

12) $49x^2 - 25$

13) $16x^2 + 81$

Factor the polynomial completely.

14) $729p^3 - 1$

15) $729c^3 + 8$

Solve the equation.

16) $(9y + 7)(7y + 11) = 0$

17) $x^2 - x = 42$

18) $5k^2 - 29k - 6 = 0$

19) $n^2 - 121 = 0$

20) $m(5m - 18) = -9$

Solve the problem.

21) A rectangle has a length of $x + 2$ and a width of $x - 2$, and has an area of 60 square units. Find the length and width of the rectangle. ($A = LW$)

22) A triangle has a base of length $x + 2$ and a height of $x + 8$ and has an area of 36 square units. Find the base and height. ($A = \frac{1}{2}bh$)

Solve the problem. Round to the nearest tenth, if necessary.

23) If an object is propelled upward from ground level with an initial velocity of 72.1 feet per second, its height h in feet t seconds later is given by the equation $h = -16t^2 + 72.1t$. After how many seconds does the object hit the ground?

Solve the problem.

24) Find three consecutive integers such that the sum of the squares of the smaller two is equal to the square of the largest.

Perform the division. Write the answer with positive exponents.

25) $\frac{8x^{12} - 12x^8}{2x^4}$

Perform the division.

26) $(6x^3y^2 + 6x^5y^6 - 6x^6y^3) \div (2x^3y^2)$

27) $\frac{y^2 + 10y + 25}{y + 5}$

28) $\frac{p^2 + 7p - 15}{p + 9}$

29) $\frac{x^3 + 125}{x + 5}$

30) $\frac{x^4 + 4x^2 + 10}{x^2 + 1}$

Answer Key
Testname: FACTORINGPRACTICE

1) $6m^3(10m^6 - 3m^2 - 3)$
2) $12x^2y^2(6x^5y^6 + 7y^3 + 5x^2)$
3) $(3x + 4)(6x - 5)$
4) $(t + s)(5 - m)$
5) $(x + 11)(x - 6)$
6) $(s + 3)(s + 3)$
7) Prime
8) $9(x + 2)(x - 3)$
9) $5x^4(x - 4)(x + 7)$
10) $(x + 4y)(x + 5y)$
11) $p^3q^2(p - 8q)(p + 4q)$
12) $(7x + 5)(7x - 5)$
13) Prime
14) $(9p - 1)(81p^2 + 9p + 1)$
15) $(9c + 2)(81c^2 - 18c + 4)$
16) $\left\{-\frac{7}{9}, -\frac{11}{7}\right\}$
17) {−6, 7}
18) $\left\{-\frac{1}{5}, 6\right\}$
19) {−11, 11}
20) $\left\{\frac{3}{5}, 3\right\}$
21) width = 6 units; length = 10 units
22) base = 6 units; height = 12 units
23) 4.5 sec
24) −1, 0, 1 or 3, 4, 5
25) $4x^8 - 6x^4$
26) $3 + 3x^2y^4 - 3x^3y$
27) $y + 5$
28) $p - 2 + \frac{3}{p + 9}$
29) $x^2 - 5x + 25$
30) $x^2 + 3 + \frac{7}{x^2 + 1}$