

Name SOLUTIONS!

Each of the 18 questions is worth 5 points plus 1 point for each of 10 homework problems for a total of 100 points

Perform the indicated operation.

1) $(2x^6 + 2x^8 - 2 - 9x^7) - (-4 + 2x^7 + 5x^8 - 7x^6)$

$$\begin{array}{r} 2x^8 - 9x^7 + 2x^6 - 2 \\ -5x^8 - 2x^7 + 7x^6 + 4 \\ \hline \end{array}$$

$$\boxed{-3x^8 - 11x^7 + 9x^6 + 2}$$

Simplify the expression. Use positive exponents. Assume variables represent nonzero real numbers.

2) $(4p^8)(7p^2)$

$$\boxed{28 p^{10}}$$

Use the power rules for exponents to simplify. Write the answer in exponential form.

3) $(-3x^3y^3)^2$

$$\boxed{9x^6y^6}$$

Find the product.

4) $(6p - 1)(36p^2 + 6p + 1)$

$$\begin{array}{r}
 36p^2 + 6p + 1 \\
 \underline{6p - 1} \\
 -36p^2 - 6p - 1 \\
 \hline
 216p^3 + 36p^2 + 6p \\
 \hline
 \boxed{216p^3 - 1}
 \end{array}$$

5) $(x - 2y)(x - 9y)$

$$x^2 - 9xy - 2xy + 18y^2$$

$$\boxed{x^2 - 11xy + 18y^2}$$

Find the square.

6) $(7x + 5y)^2$

$$49x^2 + 35xy + 35xy + 25y^2$$

USING FO

$$\boxed{49x^2 + 70xy + 25y^2}$$

Find the product.

7) $(4a + 11c)(4a - 11c)$

$$(4a)^2 - (11c)^2$$

SUM & DIF OF THE SAME
TWO TERMS

$$16a^2 - 121c^2$$

Factor out the greatest common factor.

8) $64x^9y^7 + 80x^2y^5 - 160x^7y^3$

$$16x^2y^3(4x^7y^4 + 5y^2 - 10x^5)$$

9) $5x^2 + 35x$

$$5x(x+7)$$

Complete the factoring.

10) $x^2 + 5x - 14 = (x + 7)(\quad)$

$(x - 2)$

CHECK BY FOIL:

$x^2 + 7x - 2x - 14$

$x^2 + 5x - 14$

Factor completely.

11) $3x^3 + 6x^2 - 24x$

$3x(x^2 + 2x - 8)$

GCF

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

Factor as completely as possible. If unfactorable, indicate that the polynomial is prime.

12) $12y^2 + 54y - 30$

$6(2y^2 + 9y - 5)$ GCF

FOR THE TRINOMIAL: PRODUCT = -10 & SUM = +9, NUMBERS ARE +10 & -1

$6[2y^2 + 10y - y - 5]$

$6[2y(y + 5) - 1(y + 5)]$

$6(2y - 1)(y + 5)$

13) $8x^2 - 28x - 16$

$$4(2x^2 - 7x - 4)$$

PRODUCT = -8 & SUM = -7, NUMBERS ARE -8 & +1

$$4[2x^2 - 8x + x - 4]$$

$$4[2x(x-4) + 1(x-4)]$$

$$\boxed{4(2x+1)(x-4)}$$

Factor completely.

14) $16k^2 - 169m^2$

$$(4k)^2 - (13m)^2 \quad \text{DIFFERENCE OF TWO SQUARES}$$

$$\boxed{(4k+13m)(4k-13m)}$$

15) $x^4 - 16$

$$(x^2)^2 - (4)^2 \quad \text{DIF. OF SQUARES}$$

$$(x^2+4)(x^2-4) \quad \text{ANOTHER ONE!}$$

$$\boxed{(x^2+4)(x+2)(x-2)}$$

Solve the equation.

16) $10b^2 + 31b + 4 = -11$

$10b^2 + 31b + 15 = 0$

PRODUCT IS 150 & SUM IS 31, NUMBERS ARE 6 & 25

$10b^2 + 6b + 25b + 15 = 0$

$2b(5b+3) + 5(5b+3) = 0$

$(2b+5)(5b+3) = 0$

IF $2b+5=0$

$2b = -5$

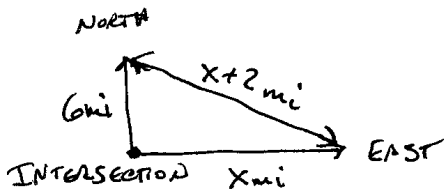
IF $5b+3=0$

$5b = -3$

$b = -\frac{5}{2}$ OR $b = -\frac{3}{5}$

Solve the problem.

17) Two cars leave an intersection. One car travels north; the other east. When the car traveling north had gone 6 miles, the distance between the cars was 2 miles more than the distance traveled by the car heading east. How far had the eastbound car traveled?



$6^2 + x^2 = (x+2)^2$

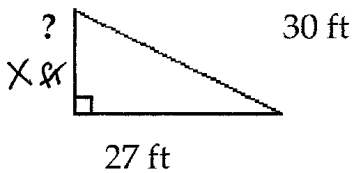
$x^2 + 36 = x^2 + 4x + 4$

$36 = 4x + 4$

$32 = 4x$

$x = 8 \text{ mi}$

18) A painter leans a ladder against one wall of a house. The ladder is 30 ft long. The base of the ladder is 27 ft from the house. How high is the wall? Round approximations to the nearest tenth.



$x^2 + 27^2 = 30^2$

$x^2 + 729 = 900$

$x^2 = 171$

$x \approx 13.1$

13.1 feet