

Pre-Calculus 11 Review and PreviewName: KEY

Date: _____

Fractions

Simplify the following. Show all work.

$$1. \frac{1x^7}{5x^7} + \frac{2x^5}{7x^5}$$

$$\frac{7}{35} + \frac{10}{35}$$

$$\frac{17}{35}$$

$$2. \frac{\left(\frac{2}{3}\right)}{\left(\frac{4}{5}\right)}$$

$$\frac{2}{3} \div \frac{4}{5}$$

$$\frac{2}{3} \cdot \frac{5}{4}$$

$$\frac{10}{12}$$

$$\frac{5}{6}$$

$$3. \frac{\frac{1}{2} - \frac{2x^2}{1x^2}}{3}$$

$$\frac{\frac{1}{2} - \frac{4}{2}}{3}$$

$$\frac{-\frac{3}{2}}{3}$$

$$-\frac{3}{2} \div \frac{3}{1}$$

$$-\frac{3}{2} \times \frac{1}{3}$$

$$-\frac{3}{6} = -\frac{1}{2}$$

Evaluating Algebraic ExpressionsEvaluate the following algebraic expressions for $x = 2$, $y = 3$, and $z = -3$.

$$1. 2x + y - 5$$

$$2(2) + (3) - 5$$

$$4 + 3 - 5$$

$$2$$

$$2. x - 3y$$

$$2 - 3(3)$$

$$2 - 9$$

$$-7$$

$$3. -2x - y + 4z$$

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

$$-4 - 3 - 12$$

$$-19$$

Algebra

Solve the following equations for the given variable.

$$1. 2x - 3 = 5$$

$$+3 \quad +3$$

$$\frac{2x}{2} = \frac{8}{2}$$

$$x = 4$$

$$2. 3x - 4 = x - 12$$

$$-x \quad -x$$

$$2x - 4 = -12$$

$$+4 \quad +4$$

$$2x = -8$$

$$\frac{2x}{2} = \frac{-8}{2}$$

$$x = -4$$

$$3. 2(2x + 1) = 5$$

$$4x + 2 = 5$$

$$-2 \quad -2$$

$$4x = 3$$

$$\frac{4x}{4} = \frac{3}{4}$$

$$x = \frac{3}{4}$$

$$4. \quad 3(x+2) - 4 = 11$$

$$3x + 6 - 4 = 11$$

$$3x + 2 = 11$$

$$-2 \quad -2$$

$$3x = 9$$

$$\frac{3x}{3} = \frac{9}{3}$$

$$x = 3$$

$$5. \quad \frac{4x}{3} = 8$$

$$\times 3 \quad \times 3$$

$$4x = 24$$

$$\frac{4x}{4} = \frac{24}{4}$$

$$x = 6$$

$$6. \quad \frac{2(5x-3)+1}{5} = 7$$

$$\times 5 \quad \times 5$$

$$2(5x-3)+1 = 35$$

$$10x - 6 + 1 = 35$$

$$10x - 5 = 35$$

$$\frac{10x}{10} = \frac{40}{10}$$

$$x = 4$$

Systems of Equations

Solve the following systems of equations using the indicated method.

1. Solve $4x + 5y = 26$ ^① by substitution.
 $3x = y - 9$ ^②

Solve ② for y

$$3x = y - 9$$

$$+9 \quad +9$$

$$3x + 9 = y$$

Substitute into ①

$$4x + 5(3x + 9) = 26$$

$$4x + 15x + 45 = 26$$

$$19x + 45 = 26$$

$$-45 \quad -45$$

$$19x = -19$$

$$\frac{19x}{19} = \frac{-19}{19}$$

$$x = -1$$

Find y

$$y = 3x + 9$$

$$y = 3(-1) + 9$$

$$y = -3 + 9$$

$$y = 6$$

2. Solve $5x + 4y = 26$ ^① by elimination.
 $3x + 2y = 15$ ^②

Times ② by 2

$$2(3x + 2y = 15)$$

$$6x + 4y = 30$$

Subtract equations

$$5x + 4y = 26$$

$$-(6x + 4y = 30)$$

$$-1x = -4$$

$$\frac{-1x}{-1} = \frac{-4}{-1}$$

$$x = 4$$

Find y

$$3x + 2y = 15$$

$$3(4) + 2y = 15$$

$$12 + 2y = 15$$

$$-12 \quad -12$$

$$2y = 3$$

$$\frac{2y}{2} = \frac{3}{2}$$

$$y = 3/2$$

Factoring

Factor the following polynomials, completely.

Common Factor

1. (a) $9b^2 - 12b^3$

$3b^2(3 - 4b)$

(b) $-7d - 14d^4$

$-7d(1 + 2d^3)$

(c) $24x + 30x^2 - 12x^4$

$6x(4 + 5x - 2x^3)$

Mult/Add or Key Number Method

(d) $x^2 + 10x + 24$

M: 24 6, 4
A: 10

$(x+6)(x+4)$

(e) $x^2 + 7x + 6$

M: 6 6, 1
A: 7

$(x+6)(x+1)$

(f) $m^2 - 7m + 12$

M: 12 -3, -4
A: -7

$(m-3)(m-4)$

(g) $b^2 - 15b + 50$

M: 50 -10, -5
A: -15

$(b-10)(b-5)$

(h) $n^2 - n - 20$

M: -20 -5, +4
A: -1

$(n-5)(n+4)$

(i) $x^2 - 2x - 48$

M: -48 -8, +6
A: -2

$(x-8)(x+6)$

Common Factor AND Mult/Add

(j) $4y^2 - 20y - 56$

$4(y^2 - 5y - 14)$

M: -5 -7, 2
A: -14

$4(y-7)(y+2)$

(k) $-5n^2 + 40n - 35$

$-5(n^2 - 8n + 7)$

M: 7 -7, -1
A: -8

$-5(n-7)(n-1)$

(l) $7c^2 - 35c + 42$

$7(c^2 - 5c + 6)$

M: 6 -3, 2
A: -5

$7(c-3)(c-2)$

Method of Decomposition

(m) $2n^2 + 13n + 6$

M: $2 \cdot 6 = 12$ 12, 1
A: 13

$\frac{2n^2 + 12n + 1n + 6}{2n(n+6) + 1(n+6)}$
 $(n+6)(2n+1)$

(n) $5a^2 - 7a - 6$

M: $5 \cdot -6 = -30$ -10, 3
A: -7

$5a^2 - 10a + 3a - 6$
 $5a(a-2) + 3(a-2)$
 $(a-2)(5a+3)$

(o) $4x^2 + 11x + 6$

M: $4 \cdot 6 = 24$ 8, 3
A: 11

$4x^2 + 8x + 3x + 6$
 $4x(x+2) + 3(x+2)$
 $(x+2)(4x+3)$

1. Common Factor

2. Factor

a) Mult/Add

c) Diff of Squares

b) Method of decomposition