Homework 2

1.

16

$$x + x = 9$$

What value of x satisfies the equation given?

2.

5

Which expression is equivalent to
$20w - (4w + 3w)$?

A) $10w$

B) $13w$

C) $19w$

D) $21w$

3.

5

$$(x^2y - 3y^2 + 5xy^2) - (-x^2y + 3xy^2 - 3y^2)$$

Which of the following is equivalent to the
expression above?

A) $4x^2y^2$

B) $8xy^2 - 6y^2$

C) $2x^2y + 2xy^2$

D) $2x^2y + 8xy^2 - 6y^2$

4.

2

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

Which of the following expressions is equivalent to
the one above?

A) $4x^2 - 8$

B) $4x^2 - 2$

C) $-2x^2 - 8$

D) $-2x^2 - 2$

5. If $7(2x - 5) - 2(2x - 5) = 4(x + 5)$, what is the value of x ?

A) 1

B) $\dfrac{15}{2}$

C) $\dfrac{65}{6}$

D) 65

6.
$$2x(x^2 + 1) + (2x^2 - 2x)$$

Which of the following expressions is equivalent to the expression above?

A) $4x^2$

B) $2x^2 + 2x$

C) $2x^3 + 2x^2$

D) $2x^3 + 2x^2 - 4x$

7.
`33`
$$(-3x^2 + 5x - 2) - 2(x^2 - 2x - 1)$$

If the expression above is rewritten in the form $ax^2 + bx + c$, where a, b, and c are constants, what is the value of b ?

8.

`15`

Which expression is equivalent to

$$\frac{8x(x-7) - 3(x-7)}{2x - 14}, \text{ where } x > 7 ?$$

A) $\dfrac{x-7}{5}$

B) $\dfrac{8x-3}{2}$

C) $\dfrac{8x^2 - 3x - 14}{2x - 14}$

D) $\dfrac{8x^2 - 3x - 77}{2x - 14}$

9.

$$(2x + 6) + (x^2 + 2x + 1)$$

Which of the following polynomials is equivalent to the expression above?

A) $x^2 + 5$

B) $x^2 + 7$

C) $4x^2 + 7$

D) $x^2 + 4x + 7$

10. Which of the following expressions is equivalent to $x^2 + 10x + 21$?

A) $(x + 1)(x + 9) + 12$

B) $(x + 1)(x + 9) + 12x$

C) $(x + 3)(x + 7) + 5$

D) $(x + 3)(x + 7) + 5x$

11. `7`

$$x^2 + 6x + 4$$

Which of the following is equivalent to the expression above?

A) $(x+3)^2 + 5$

B) $(x+3)^2 - 5$

C) $(x-3)^2 + 5$

D) $(x-3)^2 - 5$

12.

$$\frac{5}{x-1} + \frac{8}{2(x-1)}$$

Which of the following expressions is equivalent to the one above, where $x \neq 1$?

A) $\dfrac{9}{x-1}$

B) $\dfrac{14}{x-1}$

C) $\dfrac{15}{2x-2}$

D) $\dfrac{21}{2x-2}$

13. `16`

Which expression is equivalent to $6x^8y^2 + 12x^2y^2$?

A) $6x^2y^2(2x^6)$

B) $6x^2y^2(x^4)$

C) $6x^2y^2(x^6 + 2)$

D) $6x^2y^2(x^4 + 2)$

14.

$$\frac{5}{x-1} + \frac{8}{2(x-1)}$$

Which of the following expressions is equivalent to the one above, where $x \neq 1$?

A) $\dfrac{9}{x-1}$

B) $\dfrac{14}{x-1}$

C) $\dfrac{15}{2x-2}$

D) $\dfrac{21}{2x-2}$

15.

If $x \neq -1$, what is the value of $\left(\dfrac{1}{x+1}\right)(2+2x)$?

16. `15`

Which of the following is equivalent to $\left(a + \dfrac{b}{2}\right)^2$?

A) $a^2 + \dfrac{b^2}{2}$

B) $a^2 + \dfrac{b^2}{4}$

C) $a^2 + \dfrac{ab}{2} + \dfrac{b^2}{2}$

D) $a^2 + ab + \dfrac{b^2}{4}$

17.

`1`

Which expression is equivalent to
$(2x^2 - 4) - (-3x^2 + 2x - 7)$?

A) $5x^2 - 2x + 3$

B) $5x^2 + 2x - 3$

C) $-x^2 - 2x - 11$

D) $-x^2 + 2x - 11$

18.

`6`

Which of the following is equivalent to the sum of
the expressions $a^2 - 1$ and $a + 1$?

A) $a^2 + a$

B) $a^3 - 1$

C) $2a^2$

D) a^3

19.

`6`

$$3x^2 - 5x + 2$$
$$5x^2 - 2x - 6$$

Which of the following is the sum of the two
polynomials shown above?

A) $8x^2 - 7x - 4$

B) $8x^2 + 7x - 4$

C) $8x^4 - 7x^2 - 4$

D) $8x^4 + 7x^2 - 4$

20.

`16`

$$x^3(x^2 - 5) = -4x$$

If $x > 0$, what is one possible solution to the equation above?

21.

`15`

The expression $\dfrac{5x - 2}{x + 3}$ is equivalent to which of the following?

A) $\dfrac{5 - 2}{3}$

B) $5 - \dfrac{2}{3}$

C) $5 - \dfrac{2}{x + 3}$

D) $5 - \dfrac{17}{x + 3}$

22.   For a polynomial $p(x)$, the value of $p(-5) = 0$.
Which of the following must be true about $p(x)$?

A) $(x - 5)$ is a factor of $p(x)$.

B) $(x + 5)$ is a factor of $p(x)$.

C) x is a factor of $p(x)$.

D) When $p(x)$ is divided by $(x + 5)$, the remainder is -5.

23.

Simplify $\dfrac{x}{x-1} - \dfrac{x}{x+1}$

(A) $\dfrac{2x}{x+1}$

(B) $\dfrac{2x}{x^2-1}$

(C) 0

(D) $\dfrac{-2x}{x^2-1}$

(E) $\dfrac{-2x}{x-1}$

24.

29

$$\frac{2}{x-2} + \frac{3}{x+5} = \frac{rx+t}{(x-2)(x+5)}$$

The equation above is true for all $x > 2$, where r and t are positive constants. What is the value of rt?

A) -20

B) 15

C) 20

D) 60

25.

Simplify $\dfrac{x}{1-x} - \dfrac{y}{1-y} = ?$

26.

`13`

If $x > 3$, which of the following is equivalent

to $\dfrac{1}{\dfrac{1}{x+2} + \dfrac{1}{x+3}}$?

A) $\dfrac{2x+5}{x^2+5x+6}$

B) $\dfrac{x^2+5x+6}{2x+5}$

C) $2x+5$

D) x^2+5x+6