## Foundational Skills in Mathematics 2023-2024 Final Review

1. Solve for x: 2x - 5 = 7

2. Solve for x: -3(4x - 5) = 2(1 - 5x)

3. If (x - 1)/3 = k and k = 3, solve for x.

## 4. Solve for y: 2(x + y) - z = 2x + z

5. 
$$\frac{1-4x}{2+x} + 4 = \frac{3}{y}$$
, y  $\neq$  0, solve for x

## 6. When x = 2, $10 + 3(12 \div (3x)) = ?$

7. If 
$$y = 1$$
 and  $y = 2x - 5$ ,  $x = ?$ 

8. If 
$$f(x) = x^2 - 3x$$
,  $f(5) = ?$ 

9. Evaluate: 2x + 5y + 7x - y

### 10. Evaluate: $-4x^3 - 12x^3 + 9x^2$

11. Sum:  $(3x^2 + 8x - 10) + (-5x^2 - 4x - 2)$ 

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

13. Evaluate: (x + 5)(x - 3)

14. Evaluate: (4c - 3d)(3c + d)

15. Evaluate:  $(6x^2-10x)/2x$ ,  $x \neq 0$ 

16. Factor:  $x^3y^2 + x^2y^2$ 

17. Factor:  $3x^2 - 4x + 1$ 

18. Factor:  $4x^2 + 2x - 2$ 

19. Evaluate: 64<sup>-2/3</sup>

20. Evaluate:  $a^{1/2}$ 

#### 21. Solve: x–2 < -2 or x/10 > 1

#### 22. Solve: 4 < 2x + 2 < 8

23. Solve:  $x^2 + 5x + 4 = 0$ 

#### 24. Solve: $x^2 + 4x + 3 = 0$

25. Divide:  $(16x^6 - 12x^4 + 4x^2)$  by  $4x^2$ 

26. Solve for s: 4/s = -2/9

27. Solve for m:  $m - 8 \le 14$ 

28. Which of the following relations is a function?
I. {(-2, -2), (-2, -1), (-2, 0), (-2, 1), (-2, 2)}
II. {(1, 0), (-1, 0), (2, 1), (-2, 1), (3, 2)}
III. {(-2, 1), (-1, 2), (0, 0), (-1, 1), (2, -2)}
IV. {(-3, 3), (1, 3), (-3, 2), (1, 2), (-3, 1)}

29. Simplify:  $(a^{3}b)^{2}$ 

# 30. Simplify completely: $\sqrt{(48/147)}$

31. The formula for the resistance of a conductor is r = V/I. Solve for V.

32. Which system has no solution?  
I. 
$$y = x + 4$$
,  $y - x = -4$   
II.  $2y = 2x + 8$ ,  $-2x = 2y - 8$   
III.  $y = (\frac{1}{2})x + 6$ ,  $2x + 5 = y$   
IV.  $y = 4x + 1$ ,  $y - 1 = 4x$ 

#### 33. What is 3% of \$4450?

# 34. Given $f(x) = x^2 + 1$ with domain D: {-2,-1,0,1,3}. What is the range, R?

35. Solve for z:  $y + w - \frac{3}{4}z = 0$ 

36. Subtract:  $(6a^2 + 3a) - (4a^2 + 2a)$ 

37. Equation of the line that has x-intercept = -2 and y-intercept = -4?

38. Which expression is NOT equivalent to the other expressions?

I. (4x<sup>2</sup>y)<sup>2</sup> II. 4x<sup>4</sup>y<sup>2</sup> III. 16x<sup>4</sup>y<sup>2</sup> IV. 4<sup>2</sup>x<sup>4</sup>y<sup>2</sup>

39. Factor: 
$$p^2 - 40$$

# 40. For f(x) = 24 - 2x, find f(2) and find x such that f(x) = 10.