



**University of Mount Union Mathematics Placement Review Solutions – Fall 2022**

1.  $\frac{y^{12}}{x^{20}}$

2. 332

3. -14

4.  $-2v^6 + 24v^3 + 12$

5.  $W = \frac{P}{2} - L$

6. 4

7. slope:  $-\frac{3}{4}$ ,  $x$ -intercept:  $(-\frac{5}{3}, 0)$ ,  $y$ -intercept:  $(0, -\frac{5}{4})$

8.  $y = \frac{1}{3}x - 4$

9.  $\frac{5y}{6}$

10.  $\frac{7+\sqrt{3}}{23}$

11. 4

12.  $\frac{67}{30}$

13. -1

14. -8,3

15. -2

16. -3

17. (1,3)

18. 600 phones

19. 1 s and 8 s

20. 3

21.  $5 \log_a x + 2 \log_a y - \frac{1}{2} \log_a z$

22.  $(-\infty, 22]$

23.  $\frac{3\pi}{10}$

24.  $-2$

25.  $-5/3$

26.  $\frac{\pi}{4}, \frac{3\pi}{4}$

27.  $-4$

28. \$430

29. 7 ft by 12 ft

30.  $4(2x - 7y)^2$

31.  $(a - b)(x + 7)(x - 7)$

$$32. 2x^2 \cdot \sqrt[3]{3x^2}$$

$$33. 12x^5y^2$$

$$34. -\frac{76}{45}$$

$$35. \frac{21x}{5}$$

$$36. \frac{36}{x}$$

$$37. -1$$

$$38. 7x - 4$$

$$39. C(x) = 75 + 2x; \$99$$

$$40. 1$$

$$41. \frac{5}{8}, -\frac{7}{8}$$

42.  $-5, 4$

43.  $x < 4$ , or  $(-\infty, 4)$  in interval notation

44. Building A: 1178 feet, Building B: 296 feet

45. 85

46.  $x + 3 \ln(\sin x) - 4 \ln(x^2 + 3)$

47.  $(x + 4)^2$

48.  $-\frac{7}{\sqrt{53}}$

49.  $\frac{\pi}{3}, \frac{5\pi}{3}$

50. 4