Practice Test Two

1. $2^{-4} = \frac{1}{2^4} = \frac{1}{16}$

3. $2^{-1} + 3^{-1} = \frac{3 \cdot 1}{3 \cdot 2} + \frac{1 \cdot 2}{3 \cdot 2}$

$$\frac{3+2}{6} = \frac{5}{6}$$

2. $(-2)^{-2} = \frac{1}{(-2)^2} = \frac{1}{(-2)(-2)} = \frac{1}{4}$

$$-2^{-2} = (-1)\,2^{-2} = \frac{-1}{2^2} = -\frac{1}{4}$$

4. $\dfrac{-1}{p^{-8}}$

$\dfrac{-1}{\frac{1}{p^8}} = \dfrac{-1}{1} \cdot \dfrac{p^8}{1} = -p^8$

$(-1)\,p^8$

8. $\left(\dfrac{x^{-5}y^3}{x^3y^9}\right)^3$

$(x^{-8}y^{-6})^3$

$x^{-24}\,y^{-18}$

$\dfrac{1}{x^{24}\,y^{18}}$

$\left(\dfrac{1}{x^8\,y^6}\right)^3$

$\dfrac{x^{-5}}{x^3} = \dfrac{1}{x^{3-(-5)}}$

9. $\left(\dfrac{a^{-5}b^{1}}{a^{1}b^{6}}\right)^{-3}$

$\left(\dfrac{1}{a^{6}b^{5}}\right)^{-3} = (a^{6}b^{5})^{3} = a^{18}b^{15}$

7. $\dfrac{-12a^{6}b}{6ab^{3}} = -\dfrac{2a^{5}}{b^{2}}$

$-2a^{5}b^{-2}$

10. $$\frac{(a^3 b^{-6})^{-5}}{(2a^3 b^{-1})^{-2}} = \frac{a^{-15} b^{30}}{2^{-2} a^{-6} b^2}$$

$$\frac{2^2 b^{28}}{a^9} = \frac{4b^{28}}{a^9}$$

13. $$\frac{-15x^6 + 20x^5 - 10}{5x^2}$$

$$\frac{-15x^6}{5x^2} + \frac{20x^5}{5x^2} - \frac{10}{5x^2}$$

$$-3x^4 + 4x^3 - \frac{2}{x^2}$$

14. $63x^3 + 81x^8 - 45x^4 + 18$

$9(7x^3 + 9x^8 - 5x^4 + 2)$

23. $a^2 - 8ab + 12b^2$

$(a - 2b)(a - 6b)$

22. $m^2 + 20m + 19$

$(m + 19)(m + 1)$

34. $25x^2 + 16$ prime | does not factor

$25x^2 - 16 = (5x)^2 - 4^2$

$= (5x + 4)(5x - 4)$

36. $(x-8)(x+8)=0$

$x-8=0$ $\qquad$ $x+8=0$

$x=8$ $\qquad$ $x=-8$

37. $\sqrt{x}(x-3)=0$

$\sqrt{x}=0$ $\qquad$ $x-3=0$

$x=0$ $\qquad$ $x=3$

38. $x^2-11x+10=0$

$(x-10)(x-1)=0$

$x-10=0$ $\qquad$ $x-1=0$

$x=10$ $\qquad$ $x=1$

39. $x^2 - 4x = 32$

$x^2 - 4x - 32 = 0$

$(x - 8)(x + 4) = 0$

$x - 8 = 0$ $\qquad$ $x + 4 = 0$

$x = 8$ $\qquad$ $x = -4$

24. $2t^5 - 12t^4 + 16t^3$

$2t^3(t^2 - 6t + 8)$

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

25. $5x^3y + 25x^2y^2 - 70xy^3$

$5xy(x^2 + 5xy - 14y^2)$

$5xy(x+7y)(x-2y)$

23. $a^2 - 8ab + 12b^2$

$(a-2b)(a-6b)$

17. $3x^3 - x^2 + 6x - 2$

$x^2(3x-1) + 2(3x-1)$

$(3x-1)(x^2+2)$

29. $16x^3 + 19x^2 + 3x$

$x(16x^2 + 19x + 3)$

48

1, 48

2, 24

3, 16

$x[16x^2 + 3x + 16x + 3]$

$x[x(16x+3) + 1(16x+3)]$

$x(16x+3)(x+1)$

41. $12x^2 + 56x = 20$

$12x^2 + 56x - 20 = 0$

$4(3x^2 + 14x - 5) = 0$

-15, $15, 1$

$4[3x^2 + 15x - x - 5] = 0$

$4[3x(x+5) - 1(x+5)] = 0$

$4(x+5)(3x-1) = 0$

$4 = 0$ X

$x + 5 = 0$

$x = -5$

$3x - 1 = 0$

$3x = 1$

$x = \frac{1}{3}$

34. $-2y^2 + 72 = 0$

36. $6x^2 + 57x = 30$

42. $4y^3 - 36y = 0$

44. $15x^3 + 24x^2 - 63x = 0$

46. $(x - 6)(x + 7) = 0$

48. $x^2 + 15x = 0$

50. $5(3 - 4x) = 9$

52. $4y^2 - 81 = 0$

60. $9x^2 + 7x = 2$

62. $3x^2 - 6x - 9 = 0$

64. $(y - 5)(y - 2) = 28$

74. $2x^2 + 12x - 1 = 4 + 3x$

76. $4x^2 - 20x = -5x^2 - 6x - 5$