P1

Help on P1. Remember, odd number answers are in the back of book.

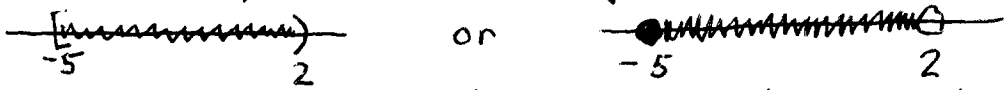
4. $2.303003000\ldots$ has a pattern, but it is not a repeating pattern, so (d).
Any terminating decimal can be expressed as a fraction, eg. $.75 = \frac{75}{100}$.
$\sqrt{n}$ is irrational unless n is a perfect square such as 1, 4, 9, 16, etc.
An integer can always be expressed as a rational number, eg $-7 = \frac{-7}{1}$.

5. If $\frac{1}{2}\sqrt{2}$ is rational then so is $\sqrt{2}$, a contradiction. Thus it is irrational.

9. $^{41}/_{333} = .123123\ldots = .\overline{123}$

14. Type $5.464545\ldots$ (as far as you can), MATH, 1:Frac, ENTER. (Now do it by hand. $x = 5.\overline{45}$, $100x = 545.\overline{45}$ so $100x - x = 540 \Rightarrow 99x = 540$, $x = \frac{540}{99} = ?$)

33. You can use either type of notation: eg. $-5 \le x < 2$



35. Write each fraction as a decimal to 5 places, and compare place values from left to right. Check answer in back.

42. k is no less than -3 means $k \ge -3$, thus $-3 \le k < 5$.

44. $2.5\% \le r \le 5\%$ or $.025 \le r \le .05$.

54. eg. $-5 - |-5| = -5 - 5 = -10$

72. distance $= |a-b| = |b-a|$

73. a) $-$ b) $(-)$ since $B < A$.

79. I'll do 80. $|x-(-10)| \ge 6$, $|x-(-10)|$ = distance from x to -10.

100. $-(-1)^2 + 5(-1) - 4 = -1 - 5 - 4 = ?$ b) $-1^2 + 5 \cdot 1 - 4 = -1 + 5 - 4 = ?$

103. commut. law of addition

107. Distributive law

115. Least common denom = 24 $\frac{5}{8} - \frac{5}{12} + \frac{1}{6} = \frac{15}{24} - \frac{10}{24} + \frac{4}{24} = \frac{15-10+4}{24} = ?$

117. $12 \div \frac{4}{1} = 12 \times \frac{4}{1} = \frac{12}{1} \times \frac{4}{1} = \frac{48}{1} = 48$

123. $(11.46 - 5.37) / 3.91$ Enter

↖ Need parentheses.

P2

2) eg. $(-5)^3 = (-5)\cdot(-5)\cdot(-5)$

7. $(-10)^5$

12. a) $(8\cdot 9)^2 = (72)^2 = ?$ b) $-\frac{3^3}{5^3}\cdot\frac{5^2}{3^2} = -\frac{3}{5}$

14. a) $\frac{2^2}{2^{-2}}\cdot\frac{3^{-2}}{3^{-1}} = 2^{2-(-2)}\cdot 3^{-2+1} = 2^4\cdot 3^{-1} = 16/3$ b) $n^0 = 1$ for any $n \neq 0$.

15. a) $\frac{1}{2}+\frac{1}{3} = \frac{3}{6}+\frac{2}{6} = ?$ b) $\left(2^{-1}\right)^{-2} = 2^{(-1)\cdot(-2)} = 2^?$

31. a) $6y^2\cdot 2^2\cdot y^8 = 24y^{2+8} = ?$ b) $\frac{3x^5}{x^3} = 3x^{5-3} = ?$

32. a) $(-z)^3(3z^4) = -z^3\cdot 3\cdot z^4 = -3z^{3+4} = ?$ b) $\frac{25y^8}{10y^4} = \frac{5}{2}y^{8-4} = ?$

38. a) $4y^{-2}\,8y^4 = 32y^{-2+4} = ?$ b) $\left(\frac{x^{-3}y^4}{5}\right)^{-3} = \frac{x^{(-3)(-3)}y^{4(-3)}}{5^{-3}} = \frac{5^3x^9}{y^{12}}$

39. a) $\left(4a^{-2}b^3\right)^{-3} = 4^{-3}a^6b^{-9} = \frac{a^6}{4^3b^9}$ b) $\left(\frac{5x^2}{y^{-2}}\right)^{-4} = \left(5x^2y^2\right)^{-4} = \frac{1}{(5x^2y^2)^4} = ?$

45. $\sqrt[5]{32} = 2$

49. $(-216)^{1/3} = -6$

57. $-\sqrt[3]{-27} = -(-3) = 3$ b) $\frac{4}{\sqrt{64}} = \frac{4}{8} = \frac{1}{2}$

61. a) $32^{-3/5} = \left(32^{1/5}\right)^{-3} = 2^{-3} = \frac{1}{8}$ b) $\left(\frac{16}{81}\right)^{-3/4} = \left(\frac{81}{16}\right)^{3/4} = \left[\left(\frac{81}{16}\right)^{1/4}\right]^3 = \left(\frac{3}{2}\right)^3 = ?$

64. a) $\left(\frac{-27}{125}\right)^{1/3} = \frac{\sqrt[3]{-27}}{\sqrt[3]{125}} = ?$ b) $-\left(125\right)^{4/3} = -\left[(125)^{1/3}\right]^4 = -[5]^4 = ?$

67. a) 1.2 [^] (−2) √ (75) [+] 3 √ (8) [enter]

b) (−3 + √ (21)) / 3 [enter]

73. $\sqrt{72x^3} = \sqrt{36\cdot 2\cdot x^2\cdot x} = 6x\sqrt{2x}$ (you may assume $x>0$)

b) $\sqrt{\frac{18^2}{z^3}} = \frac{18}{\sqrt{z^2\cdot z}} = \frac{18}{z\sqrt{z}}$ (again assume $z>0$)

79. $\frac{(2x^2)^{3/2}}{2^{1/2}x^4} = \frac{2^{3/2}x^{2\cdot 3/2}}{2^{1/2}x^4} = 2^{3/2-1/2}x^{3-4} = 2x^{-1} = \frac{2}{x}$

83. a) $\frac{1}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$ b) $\frac{8}{2^{1/3}}\cdot\frac{2^{2/3}}{2^{2/3}} = \frac{8\cdot 2^{2/3}}{2} = 4\cdot 2^{2/3}$ or $4\sqrt[3]{4}$

P2

85. a) $\frac{2x}{(5-\sqrt{3})}\frac{(5+\sqrt{3})}{(5+\sqrt{3})} = \frac{2x(5+\sqrt{3})}{25-3} = \frac{\cancel{2}x(5+\sqrt{3})}{\cancel{22}\ 11}$

b) $\frac{3}{(\sqrt{5}+\sqrt{6})}\frac{(\sqrt{5}-\sqrt{6})}{(\sqrt{5}-\sqrt{6})} = \frac{3(\sqrt{5}-\sqrt{6})}{(5-6)} = ?$

91. a) $\sqrt[4]{3^2} = (3^2)^{1/4} = 3^{2/4} = 3^{1/2} = \sqrt{3}$

b) $\sqrt[6]{(x+1)^4} = (x+1)^{4/6} = (x+1)^{2/3} = \sqrt[3]{(x+1)^2}$

95. a) $2\sqrt{50} + 12\sqrt{8} = 2\sqrt{25\cdot 2} + 12\sqrt{4\cdot 2} = 2\cdot 5\sqrt{2} + 12\cdot 2\sqrt{2} = (10+24)\sqrt{2}$ $= ?$

b) $10\sqrt{32} - 6\sqrt{18} = 10\sqrt{16\cdot 2} - 6\sqrt{9\cdot 2} = 40\sqrt{2} - 18\sqrt{2} = (40-18)\sqrt{2} = ?$

101. $\sqrt{5}+\sqrt{3} = 3.968\ldots$, $\sqrt{8} = ?$ Compare

107. 8.99×10^{-5} ~~169~~.

109. 604800000

114. a) $(1.2\times 5)\times 10^{7-3} = 6\times 10^4$ b) $\frac{6}{3}\times 10^{8-(-3)} = ?$

115. a) 750 (1 + .11 /365) ^ 800 enter

b) (_ + _) / ___ enter

P3

6. Leading coeff. is always the coeff. of highest power of x

9. $-ax^4 + bx^n$, $n = 0, 1, 2$ or 3. (Anything of this type. Pick an example).

15. Leading coeff. is -4

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

31. $5z - [3z - (10z+8)] = 5z - [-7z-8] = 5z+7z+8 = ?$

46. $(.6t^4 - 2t^2) - (-t^4 + .5t^2 - 5.6)$

$= (.6+1)t^4 - (2+.5)t^2 + 5.6 = ?$

P3

49) $(x^2)(x^2-x-4)+9(x^2-x-4) = x^4-x^3-4x^2+9x^2-9x-36 = ?$

52. $x^2(x^2-3x-2)+3x(x^2-3x-2)-2(x^2-3x-2)$

$= x^4-3x^3-2x^2+3x^3-9x^2-6x-2x^2+6x+4 =$ combine like terms

59. $(2x-5y)(2x-5y) = 4x^2-10xy-10xy+25y^2 = 4x^2-20xy+25y^2$ (FOIL →)

76. $(3a^3-4b^2)(3a^3+4b^2) = 9a^6+12a^3b^2-12a^3b^2-16b^4 = ?$

86. $(2x-1)(x+3)+3(x+3) = 2x^2+6x-x-3+3x+9 = ?$ (combine)

102. a) $2x(2x+6)-x(x+4) = (4x^2+12x)-(x^2+4x)$

Big rectangle small rect $= 4x^2+12x-x^2-4x =$ combine like terms.