

Sec 1.2.4
miscellaneous

$(x+6)(x-2)$

Find all values that satisfy the condition $y_1 = y_2$

$$y_1 = \frac{3}{x+6} + \frac{1}{x-2}$$

$$\left[\frac{3}{\cancel{x+6}} + \frac{1}{x-2} = \frac{4}{x^2+4x-12} \right]$$

$(x+6)(x-2)$

$$y_2 = \frac{4}{x^2+4x-12}$$

$$3(x-2) + (x+6) = 4$$

$$3x - \cancel{6} + x + \cancel{6} = 4$$

$$4x = 4$$

$x = 1$

Find all the values that satisfy- $y_1 - y_2 = -4$

$$y_1 = \frac{x+1}{4}$$

$$y_2 = \frac{x-2}{3}$$

$$\text{or } \left(\frac{x+1}{4} - \frac{x-2}{3} = -4 \right)$$

$$3(x+1) - 4(x-2) = -48$$

$$3x+3 - 4x+8 = -48$$

$$-x + 11 = -48$$

$$-x = -59$$

$$x = 59$$

Find all the values that satisfy-

$$y_1 + y_2 = y_3$$

$$y_1 = \left[\frac{2x-1}{\underbrace{x^2+2x-8}_{(x+4)(x-2)}} + \frac{2}{x+4} = \frac{1}{x-2} \right]$$

$$y_2 = \frac{2}{x+4}$$

$$y_3 = \frac{1}{x-2}$$

$$2x-1 + 2(x-2) = x+4$$

$$2x-1 + 2x-4 = x+4$$

$$4x-5 = x+4$$

$$3x = 9 \rightarrow \boxed{x=3}$$

Determine if an equation is...

an identity - all variables add out (cancel)
resulting in a TRUE statement

conditional- the equation yields a specific solution
(like most equations you solve)

inconsistent- all variables add out
resulting in a FALSE statement

Explained another way...
any value will "fit" into the
equation so there are infinitely
many solutions. The two
equations are the same.

The equation is true based
upon the condition being met
(i.e. only if $x = 6$)

In other words, there is no solution to
the equation

Solve and determine whether the equation is conditional, inconsistent or an identity.

$$4x - 7 = 4(x - 1) + 3$$

$$4x - 7 = 4x - 4 + 3$$

$$-7 = -1$$

no solutions ←

INCONSISTENT

Same...

$$4x + 7 = 27$$

$$4x = 20$$

$$x = 5$$

CONDITIONAL

$$2(x+1) = 2x+2$$

$$2x+2 = 2x+2$$

$$2 = 2$$

True, so infinitely
many solutions.

IDENTITY

Suggested Practice

Sec 1.2, pg 119
51-67 odds



Solutions

51. 6

61. identity

53. -7

63. inconsistent

57. 19

65. conditional

59. -1

67. inconsistent