February 1, 2017

$\frac{1}{(x-2)^2} - \frac{2}{(x-2)} = 3$

$(x-2)(x-2)$ ↓ test → $x \neq 2$

$x-2=0$

$x=2$

Feb 1-10:51 AM

**Direct** | **Indirect**

$y = x \cdot k$ | $x\left(y = \frac{1}{x} \cdot k\right)$

$\frac{y}{x} = k$ | $xy = k$

Feb 1-11:11 AM

$(-2, 7)$ & $(-4, 11)$

① $d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$= \sqrt{(-4-(-2))^2+(11-7)^2}$

$= \sqrt{(-2)^2+(4)^2}$

$= \sqrt{4+16}$

$= \sqrt{20}$

$d = 2\sqrt{5}$ units

mid-point: $\left(\frac{x_2+x_1}{2}, \frac{y_2+y_1}{2}\right)$

$\left(\frac{-4+(-2)}{2}, \frac{11+7}{2}\right)$

$\left(\frac{-6}{2}, \frac{18}{2}\right)$

$(-3, 9)$

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$\left(3-\sqrt{y+3}\right)^2 = \left(\sqrt{2-y}\right)^2$

$\left(3-\sqrt{y+3}\right)\left(3-\sqrt{y+3}\right) = 2-y$

$9 - 3\sqrt{y+3} - 3\sqrt{y+3} + y + 3 = 2 - y$

$12 - 6\sqrt{y+3} + y = 2 - y$

$= y - 10$

$\frac{-6\sqrt{y+3}}{-6} = \frac{-2y-10}{-6}$

$\sqrt{y+3} = \frac{-2}{-6}y + \frac{-10}{-6}$

$= \frac{1}{3}y + \frac{5}{3}$

$\left(\sqrt{y+3}\right)^2 = \left(\frac{y+5}{3}\right)^2$

$y+3 = \left(\frac{y+5}{3}\right)\left(\frac{y+5}{3}\right)$

$9(y+3) = \frac{y^2+10y+25}{9}$

$9y+27 = y^2+10y+25$

$0 = y^2 + y - 2$ — solutions

$0 = (y+2)(y-1)$

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Check

$y = -2$ ✓

$3 - \sqrt{(-2)+3} = \sqrt{2-(-2)}$

$3 - \sqrt{1} = \sqrt{2+2}$

$3 - 1 = \sqrt{4}$

$2 = 2$

$y = 1$ ✓

$3 - \sqrt{1+3} = \sqrt{2-1}$

$3 - \sqrt{4} = \sqrt{1}$

$3 - 2 = 1$

$1 = 1$ ✓

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$\left|\frac{y+3}{6}\right| < 2$ ↑ stuff

$-2 < \frac{y+3}{6} < 2$

$-12 < y+3 < 12$

$-3 \quad -3$

$-15 < y < 9$

(-15, 9)

$\left|\frac{0+3}{6}\right| < 2$

$\left|\frac{3}{6}\right| < 2$

$\left|\frac{1}{2}\right| < 2$

$\frac{1}{2} < 2$ ✓

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