

Key

Math 181 Quiz 1 Version A (practice quiz)

Alternatively factor as  
 $(2x+5)(x-1)=0$

1. Solve  $2x^2 + 3x - 5 = 0$ .

$$a=2, \quad b=3, \quad c=-5$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-3 \pm \sqrt{9 + 40}}{4} = \frac{-3 \pm \sqrt{49}}{4} = \frac{-3 \pm 7}{4}$$
$$= \frac{-3 \pm 7}{4} = \left\{ \frac{-10}{4}, \frac{4}{4} \right\} = \left\{ -\frac{5}{2}, 1 \right\}.$$

2. Convert the fraction  $\frac{3}{7}$  to a repeating decimal.

$$\overline{.428571}$$

$$\begin{array}{r} \overline{.428571} \\ 7 \overline{) 3.0} \\ \underline{2.8} \phantom{00} \\ 20 \phantom{00} \\ \underline{14} \phantom{00} \\ 60 \phantom{00} \\ \underline{56} \phantom{00} \\ 40 \phantom{00} \\ \underline{35} \phantom{00} \\ 50 \phantom{00} \\ \underline{49} \phantom{00} \\ 10 \phantom{00} \\ \underline{7} \phantom{00} \\ 3 \end{array}$$

3. Convert the repeating decimal  $1.\overline{37}$  to a fraction.

$$S = 1.373737\dots$$

$$100S = 137.373737\dots$$

$$99S = 136$$

$$S = \frac{136}{99}$$

4. Find a solution to the system  $\begin{cases} x + y = 2 \\ 2x - y = 5. \end{cases}$

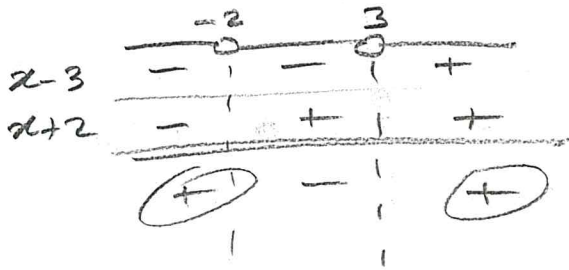
add eqns.  $\Rightarrow 3x = 7$   
 $x = \frac{7}{3}$

Thus  $\frac{7}{3} + y = 2$  so  $y = 2 - \frac{7}{3} = -\frac{1}{3}$

Therefore  $(x, y) = \left(\frac{7}{3}, -\frac{1}{3}\right)$ .

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5. Solve the inequality  $x^2 - x > 6$ .



$$x^2 - x - 6 > 0$$

$$(x-3)(x+2) > 0$$

$$x \in (-\infty, -2) \cup (3, \infty)$$

6. Solve the inequality  $\frac{1}{1+x^2} < 15$ .

$$1+x^2 > 1 \quad \text{for all } x$$

Therefore

$$\frac{1}{1+x^2} < 1 < 15 \quad \text{for all } x.$$

$$\boxed{\text{All } x}$$

7. Evaluate the sum  $1 + 2 + 3 + \dots + 1000$ .

$$S = 1000 + 999 + 998 + \dots + 1$$

$$S = 1 + 2 + 3 + \dots + 1000$$

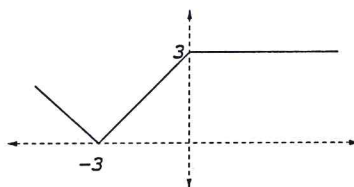

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$$2S = 1001 + 1001 + 1001 + \dots + 1001$$

$$\begin{array}{r} 500000 \\ 500 \\ \hline 500500 \end{array}$$

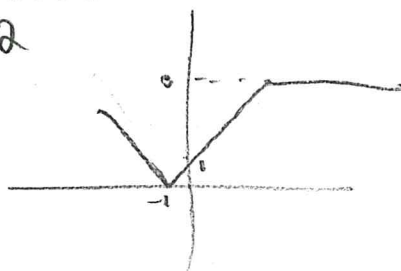
$$S = \frac{(1000)(1001)}{2} = \frac{(500)(1001)}{1} = \boxed{500500}$$

8. Suppose the graph of  $y = f(x)$  is given by



Sketch a graph of  $y = f(x-2) - 1$ .

Shift left  
by 2



Shift down  
by 1

