#s 1, 2, 3, 5 (Fibonacci Sequence!)

1. $x - \frac{3}{4} = \frac{5}{12} - \frac{1}{3}$

$$x = \frac{5}{12} - \frac{1}{3} + \frac{3}{4} = \frac{5}{12} - \frac{4}{12} + \frac{9}{12} = \frac{10}{12} = \frac{5}{6} \Rightarrow \boxed{E}$$

2. 3, 5, 7, a, b mean is 15.

$$\frac{3+5+7+a+b}{5} = 15$$

$$15 + (a+b) = 75$$

$$\frac{a+b}{2} = \frac{60}{2} = 30 \Rightarrow \boxed{C}$$

3. $$\frac{a-3}{5-c} \cdot \frac{b-4}{3-a} \cdot \frac{c-5}{4-b} = \frac{a-3}{3-a} \cdot \frac{b-4}{4-b} \cdot \frac{c-5}{5-c}$$

$$\frac{a-3}{3-a} = \frac{a-3}{-(a-3)} = \frac{1}{-1} = -1$$

$$= (-1) \cdot (-1) \cdot (-1) = -1 \Rightarrow \boxed{A}$$

5. $|x^2 - 12x + 34| = 2$

$x^2 - 12x + 34 = 2$ or $x^2 - 12x + 34 = -2$

$x^2 - 12x + 32 = 0$ | $x^2 - 12x + 36 = 0$

$(x-4)(x-8) = 0$ | $(x-6)(x-6) = 0$

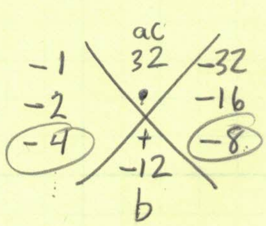
$x - 4 = 0$ or $x - 8 = 0$ | $x - 6 = 0$

$x = 4$ or $x = 8$ | $x = 6 \Rightarrow x = 4, 6, 8$

$\therefore 4 + 6 + 8 = 18 \Rightarrow \boxed{C}$

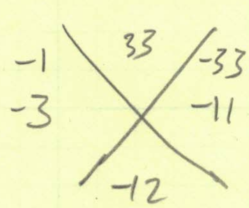
$a=1$

the "Big X" factorization method



$ax^2 + bx + c = 0$

$x^2 - 12 + 33 = 0$



$\therefore$ Not factorable!

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Use quadratic formula

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