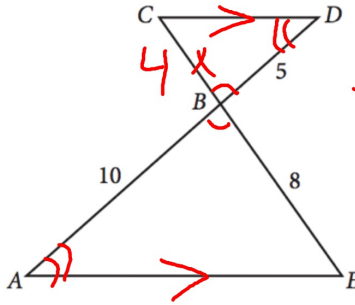
1.)



In the figure above, $\overline{AE} \parallel \overline{CD}$ and segment AD intersects segment CE at B. What is the length of segment CE? 12

$\frac{AB}{BD} = \frac{BE}{BC}$

$\frac{10}{5} = \frac{8}{x}$

$10x = 40$

$x = 4$

2.) What is the sum of all values of m that satisfy $2m^2 - 16m + 8 = 0$

A) -8

B) $-4\sqrt{3}$

C) $4\sqrt{3}$

D) 8

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

$x = \frac{16 \pm \sqrt{192}}{4}$

$= \frac{16 \pm 8\sqrt{3}}{4}$

$m = 4 + 2\sqrt{3}$

$+ 4 - 2\sqrt{3}$

8

3.) If $\frac{x^{a^2}}{x^{b^2}} = x^{16}$, $x > 1$, and $a + b = 2$, what is the value of $a - b$?

A) 8

B) 14

C) 16

D) 18

$a^2 - b^2 = 16$

$a^2 - b^2 = (a+b)(a-b)$

$16 = 2x$

$x = 8$

$4x^2 = 9$

$2x \pm 3$

4.) The graph of a line in the xy-plane has slope 2 and contains the point (1, 8). The graph of a second line passes through the points (1, 2) and (2, 1). If the two lines intersect at the point (a, b), what is the value of a + b?

A) 4

B) 3

C) -1

D) -4

$m = 2$

$(1, 8)$

$y - y_1 = m(x - x_1)$

$y - 8 = 2(x - 1)$

$y - 8 = 2x - 2$

$y = 2x + 6$

$m = -1$

$y - 2 = -1(x - 1)$

$y = -x + 3$ $(-1, 4)$

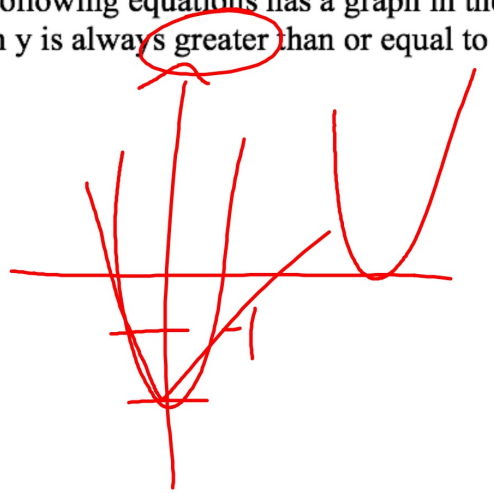
5.) Which of the following equations has a graph in the xy-plane for which y is always greater than or equal to -1?

A) $y = |x| - 2$

B) $y = x^2 - 2$

C) $y = (x - 2)^2$

D) $y = x^3 - 2$



6.) When 4 times the number x is added to 12, the result is 8. What number results when 2 times x is added to 7?

A) -1

B) 5

C) 8

D) 9

$4x + 12 = 8$

$4x = -4$

$x = -1$

$2x + 7 = 5$