

MATHEMATICS TIPS (MARCH 2020)

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PARTIAL FRACTIONS

1. $\frac{7x+13}{x^2+2x-3} = \frac{A}{x+3} + \frac{B}{x-1}$, then $AB =$

- (A) 7 (B) -6 (C) 10 (D) -3
(E) 6

$$(x+3)(x-1)\frac{7+13}{(x+3)(x-1)} = [(x+3)(x-1)\left[\frac{A}{x+3} + \frac{B}{x-1}\right]]$$

$$7x + 13 = A(x-1) + B(x+3)$$

Let $x = 1$; $7(1) + 13 = A(1-1) + B(1+3)$; $20 = 4B$; $B = 5$

Let $x = -3$; $7(-3) + 13 = A(-3-1) + B(-3+3)$;

$$-8 = -4A ; A = 2$$

$$AB = 2(5) = 10$$

2. $\frac{A}{x-2} + \frac{B}{x+11}$, then $A + B =$

(A) -5 (B) 2 (C) -3 (D) -2 (E) 5

$$(x + 11)(x - 2) \left[\frac{43 - 2x}{x^2 + 9x - 22} \right] = (x + 11)(x - 2) \left[\frac{A}{x - 2} + \frac{B}{x + 11} \right]$$

$$43 - 2x = A(x + 11) + B(x - 2)$$

$$\text{Let } x = -11$$

$$43 - 2(-11) = A(-11 + 11) + B(-11 - 2)$$

$$65 = -13B ; B = -5$$

$$\text{Let } x = 2$$

$$43 - 2(2) = A(2 + 11) + B(2 - 2)$$

$$39 = 13A ; A = 3$$

$$A + B = 3 + (-5) = -2$$