$f(x) = 2x^3 + 3x^2 - 12x - k = 0$ ($\uparrow$ fun. generally $\uparrow$, and ~~tends~~ tends to ∞ as x)

(i) $f'(x) = 6x^2 + 6x - 12 = 0$

$6(x-1)(x+2) = 0$

i.e. $x = 1,\ x = -2$

$f(x)$ have two tangent $\parallel$ to x-axis at $x_1 = 1,\ x_2 = -2$

(ii) put $f(0) = -k$ (<0, seems $k > 0$ in options)

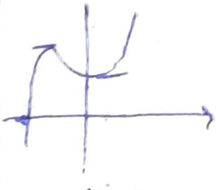


fig.1

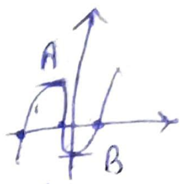


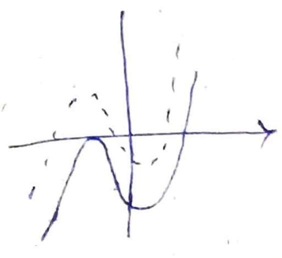
fig 2

by (i) we conclude we got two figures.
by (ii) we got fig. 2 in which we got three roots.
(that's why we do (i) & (ii) steps, so we find the nature of function)

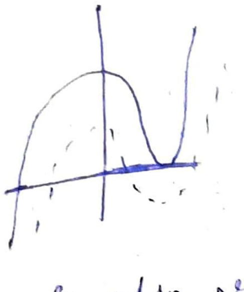
put $f(-2) \equiv k = 20$
$f(1) \equiv k = -7$ $\Big\}$ — ①

for 3 distinct roots we have notice that A, & B are not touch x-axis.
by ① if we put $f(-2)$ we see that point A touches x-axis. (same for $x = 1$)
Thus, here we notice that

at $x = -2$



at $x = 1$



here we see that graph shift upward. as we go -2 to 1.

Also value of k is also very.
In that case (.both) we get 2-same roots by graph.
So for three distinct roots. this is essential that we have dotted graph.
Hence, value of k lies b/w -7 and 20.
By option $k = 16$. (a)