

9. Determine a and b so that $3x^3 + ax^2 - 5x + b$ is divisible by both $x - 2$ and $x + 1$. Factorise the polynomial completely.

$$3x^3 + ax^2 - 5x + b$$

$$2(2(6+a)-5)+b=0$$

$$2+a+b=0$$

$$14+4a+b=0$$

$$2+a+b=0$$

$$12+3a=0$$

$$a=-4$$

$$b=4-2=2$$

$$3x^2 + (-3-4)x + (-2+4) = 0$$

$$3x^2 - 7x + 2 = 0$$

$$D = 49 - 24 = 25$$

$$x = \frac{7 \pm 5}{6} = 2; \frac{1}{3}$$

$$3x^3 + ax^2 - 5x + b = 3(x+1)(x-2)(x-\frac{1}{3})$$

	3	a	-5	b
2	3	6+a	2(6+a)-5	2(2(6+a)-5)+b

	3	a	-5	b
-1	3	-3+a	-2-a	2+a+b