	Even Degree	Odd Degree
Positive Leading Coefficient		
Negative Leading Coefficient		

Z	M	T/C

Find the zeros of the polynomial, state the multiplicity of each. Sketch (including the end behavior)
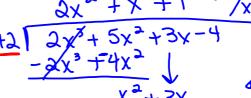
$P(x) = x(x + 3)^2(x - 1)$

Sketch:

Degree: _____

End Behavior:

$\longleftarrow \hspace{6cm} \longrightarrow$

Use long division to find the quotient (Q(x)) and remainder (R(x)). Verify your remainder with the remainder theorem.

$(2x^3 + 5x^2 + 3x - 4) \div (x + 2)$

D $\frac{2x^3}{x} = 2x^2$ $\frac{x^2}{x} = x$

M $2x^2(x+2) = 2x^3 + 4x^2$ $x(x+2)$

S Negate both terms

BD

$$\begin{array}{r} 2x^2 + x + 1 - \tfrac{6}{x+2} \\ x+2 \enclose{longdiv}{2x^3 + 5x^2 + 3x - 4} \\ \underline{-2x^3 + 4x^2} \quad\downarrow \\ x^2 + 3x \\ \underline{-x^2 + 2x} \\ x - 4 \\ \underline{-x + 2} \\ -6 \end{array}$$

$P(-2) = 2(-2)^3 + 5(-2)^2 + 3(-2) - 4$

$-16 + 20 - 6 - 4 = \boxed{-6}$

Is (x + 2) a factor of $2x^3 + 5x^2 + 3x - 4$? Explain your answer.

No b/c The Remainder ≠ 0