

$$f(x) = (x-1)^3 (x+2)^2$$

$\downarrow +x^5 \uparrow$   
 4 bumps  
 at most 5 roots

$x=1$	$x=-2$
$x=1$	$x=-2$
$x=1$	

Cross      touch

Nov 17-9:44 AM

long division

$$\begin{array}{r}
 00138 \overline{) 65043} \\
 \underline{-471} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\
 1794 \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\
 \underline{-1413} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\
 3813 \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\
 \underline{-3768} \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\
 45
 \end{array}$$

Nov 17-9:53 AM

Long Divisim w/ Polynomials

$$\frac{3}{2}x^2 - \frac{11}{8}x + \frac{65}{32}$$

$$\begin{array}{r}
 \underline{4x^2 + 7x + 1} \overline{) 6x^4 + 5x^3 + 0x^2 + 4x + 3} \\
 - (6x^4 + \frac{21}{2}x^3 + \frac{3}{2}x^2) \downarrow \\
 \hline
 1 \cdot \frac{3}{2}x^2 \quad \frac{-11}{2}x^3 - \frac{3}{2}x^2 + 4x \\
 - (\frac{-11}{2}x^3 - \frac{77}{8}x^2 - \frac{11}{8}x) \downarrow \\
 \hline
 \frac{65}{8}x^2 + \frac{43}{8}x + 3 \\
 - (\frac{65}{8}x^2 + \frac{455}{32}x + \frac{65}{32}) \downarrow \\
 \hline
 \text{remainder } \boxed{-\frac{283}{32}x + \frac{31}{32}}
 \end{array}$$

6

Nov 17-9:58 AM

Divide

$$\frac{x^4 + 5x^3 - 6x^2 - x - 2}{x + 2}$$

$$x^3 + 3x^2 - 12x + 23 + \frac{-48}{x+2}$$

$$\begin{array}{r}
 \underline{x+2} \overline{) x^4 + 5x^3 - 6x^2 - x - 2} \\
 - (x^4 + 2x^3) \downarrow \\
 \hline
 3x^3 - 6x^2 \\
 - (3x^3 + 6x^2) \downarrow \\
 \hline
 -12x^2 - x \\
 - (-12x^2 - 24x) \downarrow \\
 \hline
 23x - 2 \\
 - (23x + 46) \downarrow \\
 \hline
 -48
 \end{array}$$

Nov 17-10:21 AM

divide

$$\frac{f(x)}{d(x)}$$

Hw  
p223  
# 1-6 all

Nov 17-10:25 AM