POLYNOMIAL, RATIONAL, & RADICAL FUNCTIONS

$$f(x) = -2x^4 + 3x^2 + 7x - 1$$
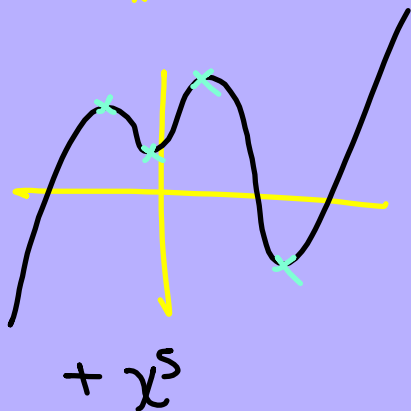
even

$$\lim_{x \to -\infty} f(x) = -\infty \qquad \lim_{x \to \infty} f(x) = -\infty$$

odd

$$f(x) = -7x^3 + 2x^2 - 4x^5 + 1$$

$$\lim_{x \to -\infty} f(x) = \infty \qquad \lim_{x \to \infty} f(x) = -\infty$$

$+ x^5$

3/(a) $x^3 - x^2 - 34x - 56 = 0$ $\pm 1 \pm 2 \pm 4 \pm 7 \pm 8 \pm 14 \pm 28 \pm 56$

$x^3 - x^2 - 34x - 36$ | $x = -2$ O

$-2 |$ 1 -1 -34 -56

$x = -2 +$ $\nearrow -2 \nearrow 6 \nearrow 56$

1   -3 -28 O

$(x+2)(x^2 - 3x - 28)$

$(x+2)(x-7)(x+4)$

$\boxed{x = -2, 7, -4}$

Partial Fractions

7(b) _____ grouping

7(d) $\dfrac{}{2x^4 - x^2 - 3}$

$(2x^2\quad)(x^2\quad)$

Simplify

$$\frac{6\left(2x^2-1\right)^3\left(x+5\right)^{-1/4} - 3\left(2x^2-1\right)^2 4x \cdot \left(x+5\right)^{3/4+1/4}}{\left(\left(x+5\right)^{3/4}\right)^2}$$

$$\frac{3\left(2x^2-1\right)^2\left(x+5\right)^{-1/4}\left[2\left(2x^2-1\right) - 4x\left(x+5\right)\right]}{\left(x+5\right)^{6/4+1/4}}$$

$$\frac{3\left(2x^2-1\right)^2\left[4x^2-2-4x^2-20x\right]}{\left(x+5\right)^{7/4}}$$

$$\frac{3\left(2x^2-1\right)^2\left[-2-20x\right]}{\left(x+5\right)^{7/4}} = \frac{-6\left(2x^2-1\right)^2\left(1+10x\right)}{\left(x+5\right)^{7/4}}$$