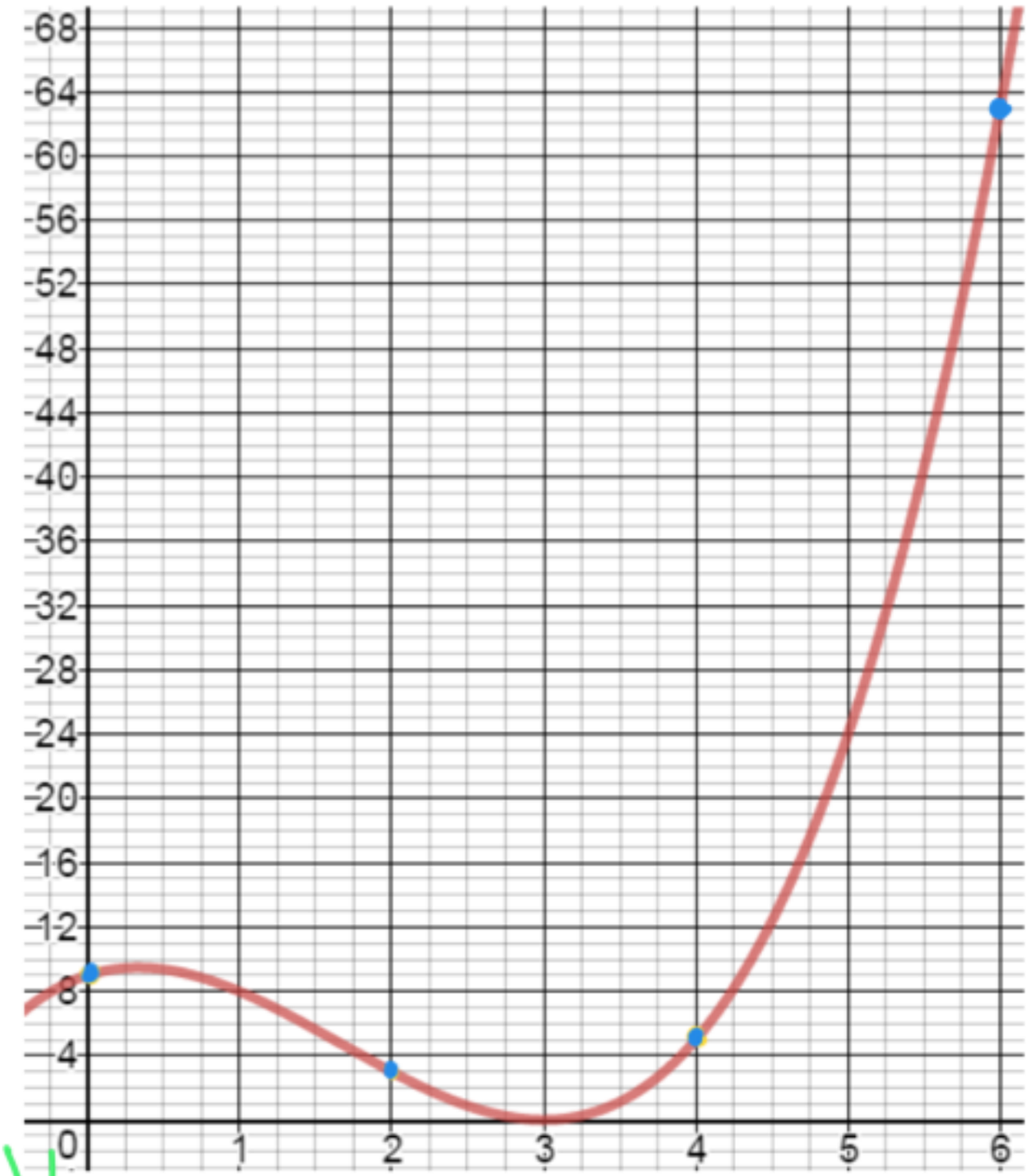
Approximate Area Under a Curve

$f(x) = (x+1)(x-3)^2$, $[0,6]$, $n = 3$



Left Side Approximation

$2f(0) + 2 \cdot f(2) + 2 \cdot f(4)$

$2(9) + 2(3) + 2(5) = 18 + 6 + 10 = \boxed{34}$

Right Side Approximation

$2(f(2) + f(4) + f(6))$

$2(3 + 5 + 63) = 2(71) = \boxed{142}$

Midpoint Approximation

$2(f(1) + f(3) + f(5))$

$2(8 + 0 + 24) = 2(32) = \boxed{64}$

Trapezoid Approximation

$\frac{2}{2}\left((\underset{b_1}{f(0)} + \underset{b_2}{f(2)}) + (f(2) + f(4)) + (f(4) + f(6))\right)$

$1(9 + 2(3) + 2(5) + 63)$

$(9 + 6 + 10 + 63) = \boxed{88}$

$A = \frac{(b_1 + b_2) \cdot h}{2}$

$\frac{b-a}{n} = \frac{6-0}{3} = 2$

Approximate Area Under a Curve

$f(x) = 8x - x^2,\ [0,6]\ n = 3$

Left Side Approximation

$2(f(0) + f(2) + f(4))$

$2(0 + 12 + 16) = 2(28) = \boxed{56}$

Right Side Approximation

$2(f(2) + f(4) + f(6))$

$2(12 + 16 + 12) = 2(40) = \boxed{80}$

Midpoint Approximation

$2(f(1) + f(3) + f(5))$

$2(7 + 15 + 15) = 2(37) = \boxed{74}$

Trapezoid Approximation

$\frac{2}{2}(f(0) + 2f(2) + 2f(4) + f(6))$

$1(0 + 2(12) + 2(16) + 12) = 24 + 32 + 12 = \boxed{68}$