

$$\textcircled{13} X^3 + 1$$

$$(X+1) \left(\frac{X^2}{X \cdot X} - \frac{X}{1 \cdot X} + \frac{1}{1 \cdot 1} \right)$$

Ex) $64a^3 + 27$

$$(4a+3) \left(\frac{16a^2}{4a \cdot 4a} - \frac{12a}{4a \cdot 3} + \frac{9}{3 \cdot 3} \right)$$

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$$X^3 - 2X^2 - 41X$$

$$X(X^2 - 2X - 41)$$

$a=1 \quad b=-2 \quad c=-41$

$$X = \frac{2 \pm \sqrt{(-2)^2 - 4(1)(-41)}}{2(1)}$$

$$X = \frac{2 \pm \sqrt{168}}{2}$$

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$$X = \frac{2 \pm \sqrt{168}}{2}$$

$$X = \frac{1 \pm \sqrt{42}}{1}$$

$X = 1 + \sqrt{42} \quad X = 1 - \sqrt{42}$

$X - 1 = \sqrt{42} \quad X - 1 = -\sqrt{42}$

$$(X - 1 - \sqrt{42})(X - 1 + \sqrt{42})$$

168
4 42
2 21
3 7

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$$X(X - 1 - \sqrt{42})(X - 1 + \sqrt{42})$$

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$$X(X-4)(X-4)$$

$$X(X-4)^2$$

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$$\textcircled{23} n+2 \left| \frac{n^2+7n-2}{n^3+9n^2+12n+3} \right.$$

$$-n^3 - 2n^2$$

$$\frac{7n^2+12n+3}{-7n^2-14n}$$

$$\frac{2n+3}{-2n-4}$$

$$\frac{7}{-7}$$

$$n^2+7n-2 + \frac{7}{n+2}$$

$3 \overline{) 10} -9 \underline{\quad} 1$

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$$\begin{array}{r}
 3 \overline{)10} \\
 \underline{-9} \\
 1
 \end{array}
 \begin{array}{l}
 3R1 \\
 3 + \frac{1}{3}
 \end{array}
 \quad (3\frac{1}{3}) \cdot 3 = 10$$

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11 2 Sum of Arithmetic

$$S = \frac{n}{2}(a_1 + a_n)$$

a_1 = first term
 a_n = last term
 n = number of terms

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Ex 1) $-5 - 11 - 17 - 23 \dots - 71$

$a_1 = -5$ $d = -6$
 $a_n = -5 + (n-1)(-6)$
 $a_n = -5 - 6n + 6$
 $a_n = -6n + 1$

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$-71 = -6n + 1$ Plug into find sum
 $-1 = -6n - 1$
 $-72 = -6n$
 $\frac{-72}{-6} = \frac{-6n}{-6}$
 $12 = n$

$S = \frac{12}{2}(-5 + -71)$
 $S = 6(-76)$
 $S = -456$

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$$S = \frac{n}{2}(2a_1 + (n-1)d)$$

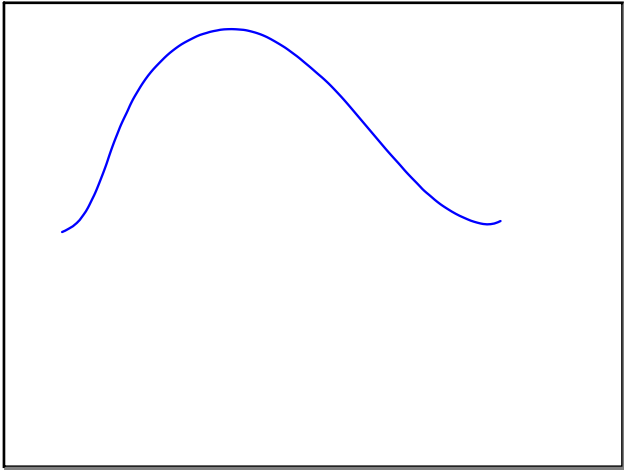
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Ex 3 $\sum_{k=1}^8 4k + 3$

$a_1 = 4(1) + 3 = 7$ $a_n = 4(8) + 3 = 35$ $n = 8$

$S = \frac{8}{2}(7 + 35)$
 $S = 4(42)$ $S = 168$

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