

1,	1,	2,	-3,-	29,	-108,	-243,	-179,	1282,	7417,	22871,	40572,	-12023,	-405879,	-1754238,	-4521563,	-5531429,	13774852,	110895797,	388591221
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$$x \text{ fib}(n-1) + y \text{ fib}(n-2) + z \text{ fib}(n-3) = -3$$

$$x(2) + y + z = -3$$

$$\textcircled{1} 2x + y + z = -3$$

$$\textcircled{2} x(-3) + y(2) + z(1) = -29$$

$$-3x + 2y + z = -29$$

$$\textcircled{3} x(-29) + y(-3) + z(2) = -108$$

$$2x + y + z = -3$$

$$-3x + 2y + z = -29$$

$$-29x - 3y + 2z = -108$$

$$\begin{array}{r} -4x - 2y - 2z = +6 \quad \textcircled{1} * (-2) \\ -3x + 2y + z = -29 \end{array}$$

$$-7x - z = -23 \quad \textcircled{I}$$

$$-z = -23 + 7x$$

$$z = 23 - 7x$$

$$z = 23 - 7(4)$$

$$z = -5$$

$$\textcircled{3} 6x + 3y + 3z = -9$$

$$-29x - 3y + 2z = -108$$

$$-23x + 5z = 117$$

$$-23x + 5(23 - 7x) = 117$$

$$-23x + 115 - 35x = 117$$

$$-58x = -232$$

$$\boxed{x = 4}$$

$$2x + y + z = -3$$

$$2(4) + y - 5 = -3$$

$$y + 3 = -3$$

$$y = -6$$

$$x = 4$$

$$y = -6$$

$$z = -5$$

$$4 \text{ fib}(n-1) + (-6) \text{ fib}(n-2) + (-5) \text{ fib}(n-3) = f(n)$$