> $A\_1 := 1 - x$

$$A\_1 := 1 - x \quad (1)$$

> $A\_2 := 2 - x$

$$A\_2 := 2 - x \quad (2)$$

> $A\_3 := 3 - x$

$$A\_3 := 3 - x \quad (3)$$

> $B\_1 := x$

$$B\_1 := x \quad (4)$$

> $B\_2 := x - 1$

$$B\_2 := x - 1 \quad (5)$$

> $B\_3 := x - 2$

$$B\_3 := x - 2 \quad (6)$$

> $C\_1 := simplify\left(\frac{1}{6}\left(A\_1^3 - A\_1\right)\right)$

$$C\_1 := -\frac{1}{6}x^3 + \frac{1}{2}x^2 - \frac{1}{3}x \quad (7)$$

> $C\_2 := simplify\left(\frac{1}{6}\left(A\_2^3 - A\_2\right)\right)$

$$C\_2 := -\frac{1}{6}x^3 + x^2 - \frac{11}{6}x + 1 \quad (8)$$

> $C\_3 := simplify\left(\frac{1}{6}\left(A\_3^3 - A\_3\right)\right)$

$$C\_3 := -\frac{1}{6}x^3 + \frac{3}{2}x^2 - \frac{13}{3}x + 4 \quad (9)$$

> $D\_1 := simplify\left(\frac{1}{6}\left(B\_1^3 - B\_1\right)\right)$

$$D\_1 := \frac{1}{6}x^3 - \frac{1}{6}x \quad (10)$$

> $D\_2 := simplify\left(\frac{1}{6}\left(B\_2^3 - B\_2\right)\right)$

$$D\_2 := \frac{1}{6}x^3 - \frac{1}{2}x^2 + \frac{1}{3}x \quad (11)$$

> $D\_3 := simplify\left(\frac{1}{6}\left(B\_3^3 - B\_3\right)\right)$

$$D\_3 := \frac{1}{6}x^3 - x^2 + \frac{11}{6}x - 1 \quad (12)$$

> $with(LinearAlgebra) :$

> $M := \langle\langle 1, 1, 0, 0\rangle | \langle 0, 4, 1, 0\rangle | \langle 0, 1, 4, 0\rangle | \langle 0, 0, 1, 1\rangle\rangle$

$$M := \begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & 4 & 1 & 0 \\ 0 & 1 & 4 & 1 \\ 0 & 0 & 0 & 1 \end{bmatrix} \quad (13)$$

> $Mi := MatrixInverse(M)$

$$Mi := \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{4}{15} & \frac{4}{15} & -\frac{1}{15} & \frac{1}{15} \\ \frac{1}{15} & -\frac{1}{15} & \frac{4}{15} & -\frac{4}{15} \\ 0 & 0 & 0 & 1 \end{bmatrix} \quad (14)$$

> $MatrixVectorMultiply(M, \langle 0, -30, 12, 0 \rangle)$

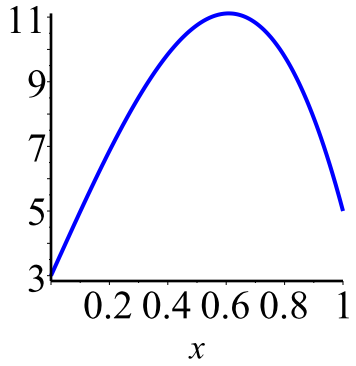
$$\begin{bmatrix} 0 \\ -108 \\ 18 \\ 0 \end{bmatrix} \quad (15)$$

> $y\_1 := simplify(3 \cdot A\_1 + 5 \cdot B\_1 - 108 \cdot D\_1)$

$$y\_1 := -18\,x^3 + 20\,x + 3 \quad (16)$$

> $p\_1 := plot(y\_1, x = 0..1, color = blue)$

$p\_1 :=$

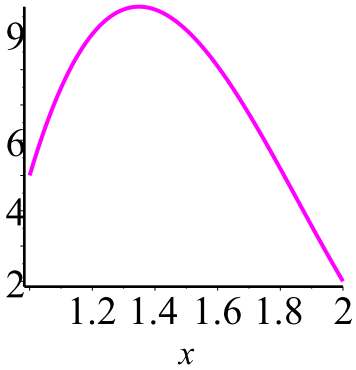


> $y\_2 := simplify(5 \cdot A\_2 + 2 \cdot B\_2 - 108 \cdot C\_2 + 18 \cdot D\_2)$

$$y\_2 := 21\,x^3 - 117\,x^2 + 201\,x - 100 \quad (17)$$

> $p\_2 := plot(y\_2, x = 1..2, color = magenta)$

$p\_2 :=$

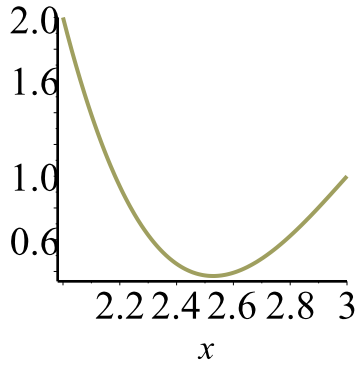


> $y\_3 := simplify(2 \cdot A\_3 + B\_3 + 18\,C\_3)$

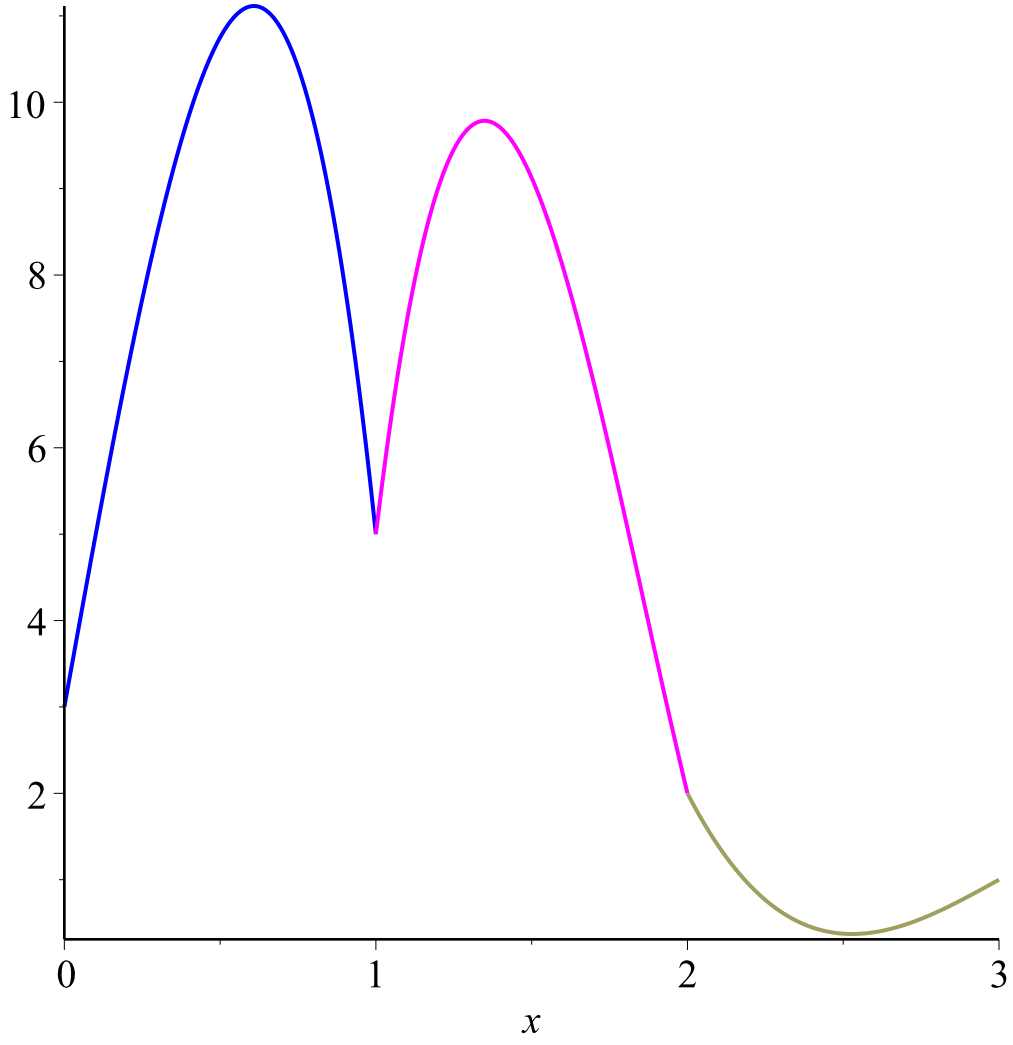
$$y\_3 := -3\,x^3 + 27\,x^2 - 79\,x + 76 \quad (18)$$

> $p\_3 := plot(y\_3, x = 2..3, color = khaki)$

$p\_3 :=$




```
> with(plots) :
> display(p_1, p_2, p_3)
```




```
>
```