THEMA 1

```
f[x_] := 225 * x - x^2 - 2 * x^3 + 8 * x^2 - 100 * x - 50
```

```
Plot[f[x]
```

```
FindMaximum[f[x], {x, 100}]
```

```
{520.426, {x → 5.87776}}
```

```
g[x_] := 225 * x - x^2 - 2 * x^3 + 7 * x^2 - 200 * x - 50
```

```
FindMaximum[g[x], {x, 100}]
```

```
{25.976, {x → 3.27303}}
```

THEMA 4

$$a = \sqrt[n]{n \times 3^{-n}}$$

3 THEMA

$$-0.8\, x^{0.5} + 0.5\, x$$

4 THEMA

$$(3^{-n}\, n)^{\frac{1}{n}}$$

$$(3^{-n}\, n)^{\frac{1}{n}}$$

```
Limit[a, n → ∞]
```

$$(3^{-n}\, n)^{\frac{1}{n}}$$

$$\frac{1}{3}$$

$$b = \frac{2^{n+1}}{(n+1)!}$$

$$\frac{2^{1+n}}{(1+n)!}$$

```
Limit[b, n → ∞]
```

```
0
```

THEMA 3

```
Integrate[0.5 - 0.4 * x^-0.5, x]
```

$$-0.8\, x^{0.5} + 0.5\, x$$

```
Integrate[(x + 4) × ln (x), x]
```

$$2 \ln x^2 + \frac{\ln x^3}{3}$$

```
Integrate[x × e^(2×x), x]
```

$$\frac{e^{2x} (-1 + 2 x \text{Log}[e])}{4 \text{Log}[e]^2}$$

```
Integrate[0.5 - 0.4 × x^-0.5, {x, 100, 10 000}]
```

4878.

```
Integrate[(x + 4) × ln (x), {x, 100, 10 000}]
```

333 532 980 000 ln

```
Integrate[x × e^(2×x), {x, 100, 10 000}]
```

$$\frac{e^{200} \left(1 - e^{19\,800} + 200 \left(-1 + 100\, e^{19\,800}\right) \text{Log}[e]\right)}{4 \text{Log}[e]^2}$$

```
Limit[lnx^3/(x - 1)^3, x → 1]
```

$\ln x^2\, \infty$

```
Limit[(5 × x^2 + 4 × x + 3)/(10 × x^2 - 7 × x + 4), x → +∞]
```

$$\frac{1}{2}$$

```
Limit[(2 × e^x)/(1 + e^x), x → ∞]
```

$$\text{Limit}\left[\frac{2\, e^x}{1 + e^x}, x \to \infty\right]$$