Travaux Pratiques TP N°2

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Matière : Outils Numériques

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restart

$p7 := convert(taylor(e^x, x = 0, 7), polynom)$

$$1 + x + \frac{1}{2} x^2 + \frac{1}{6} x^3 + \frac{1}{24} x^4 + \frac{1}{120} x^5 + \frac{1}{720} x^6 \qquad (1)$$

$p6 := convert(taylor(e^x, x = 0, 6), polynom)$

$$1 + x + \frac{1}{2} x^2 + \frac{1}{6} x^3 + \frac{1}{24} x^4 + \frac{1}{120} x^5 \qquad (2)$$

$p5 := convert(taylor(e^x, x = 0, 5), polynom)$

$$1 + x + \frac{1}{2} x^2 + \frac{1}{6} x^3 + \frac{1}{24} x^4 \qquad (3)$$

$p4 := convert(taylor(e^x, x = 0, 4), polynom)$

$$1 + x + \frac{1}{2} x^2 + \frac{1}{6} x^3 \qquad (4)$$

$p3 := convert(taylor(e^x, x = 0, 3), polynom)$

$$1 + x + \frac{1}{2} x^2 \qquad (5)$$

$p0 := e^x$

$$e^x \qquad (6)$$

$pp0 := plot(p0, x = 3 ..6, color = blue, legend = $"Exp(x)"$, style = point) :$
$pp3 := plot(p3, x = 3 ..6, color = magenta, legend = $"3 termes"$) :$
$pp4 := plot(p4, x = 3 ..6, color = black, legend = $"4 termes"$) :$
$pp5 := plot(p5, x = 3 ..6, color = brown, legend = $"5 termes"$) :$
$pp6 := plot(p6, x = 3 ..6, color = green, legend = $"6 termes"$) :$
$pp7 := plot(p7, x = 3 ..6, color = red, legend = $"7 termes"$) :$
$plots[display]([pp0, pp7, pp6, pp5, pp4, pp3], labels = [x, Exp(x)]$
$, title = $"Approximation de la fonction Exp(x) par des séries de Taylor"$, font = [TIMES, BOLD, 12],$

legendstyle = [*location* = *right*, *font* = [*HELVETICA*, *BOLD*, 10]]);

Approximation de la fonction Exp(x) par des séries de Taylor