Taller 10

$f(x) = 0,35x^4 - 0,45x^2 + 4,8$

$f(1,1) = 4,767935$

$f'(1,1) = 0,8734$

$f''(1,1) = 4,182$

b. Primera y segunda diferencia centrada

$f'(x_i) = (f(x_{i+1}) - f(x_{i-1}))/2h + O(h^2)$

$f'(x_i) = (f(1,15) - f(1,05))/2(0,05) + O(h^2)$

$f'(x_i) = (-4,81702718 - (-4,729302875))/0,1 = 0,87725$

$f''(x_i) = (f(x_{i+1}) - 2f(x_i) + f(x_{i-1}))/h^2$

$f''(x_i) = (-4,81702718 75 - 2(-4,767935) + (-4,729302 18))/h^2$

$F''(x_i) = 4,182$

a. primera y segunda diferencia adelante/atras

$F(x) = (f(x_{i+1}) - f(x_i))/h$

$F'(x) = (4,87776 - 4,767935)/0,1 = 1,09825$

$F'(x) = (F(x_{i-1}) - f(x_i))/h$

$f'(x) = 4,7 - 4,767935/0,1 = -0,67935$

$F'(x) = (F(x_{i+1}) - F(x_{i-1}))/2h$

$F'(x) = (4,87776 - 4,7)/2(0,1) = 0,8888$

Scribe

$F''(x) = (f(x_{i+2}) - 2F(x_{i+1}) + F(x_i))/h^2$

$F''(x) = (5,039135 - 2(4,87776) + 4,767935)/(0,1)^2 = 5,155$

$F''(x) = (f(x_i) - 2F(x_{i-1}) + F(x_{i-2}))/h^2$

$f''(x) = (4,767935 - 2(4,7) + (4,665135))/h^2 = 3,307$

$F''(x) = (f(x_{i+1}) + f(x_{i-1}) - 2f(x_i))/h^2$

$F''(x) = (4,87776 - 9,53587 + 4,7)/0,1^2 = 4,189$