Evalute the following definite integrals.

$$\int_1^3 e^x\,dx = e^3 - e \qquad \int_0^\pi \cos x\,dx = \sin\pi - \sin 0 = 0$$

$$\int_{-1}^3 3x^2+2x-1\,dx = 3^3+3^2-3-((-1)^3+(-1)^2-(-1)) = 33-(1) = 29$$

Find $F'(x)$ when $F(x)$ is given by the following integrals:

$$F(x) = \int_1^x e^t\,dt, \quad F'(x) = e^x \qquad F(x) = \int_x^3 \cos t^2\,dt, \quad F'(x) = -\cos x^2$$

$$F(x) = \int_{-1}^{x^2} e^t\,dt, \quad F'(x) = e^{x^2}2x \qquad F(x) = \int_2^{\sqrt{x^2+1}} \sqrt{t-1}\,dt,$$

$$F'(x) = \sqrt{\sqrt{x^2+1}-1}\ \frac{1}{2}(x^2+1)^{-1/2}2x$$

$$F(x) = \int_{-x}^{2x} \sin t\,dt, \quad F'(x) = 2\sin 2x-(-\sin(-x)) = 2\sin 2x+\sin(-x)$$

$$F(x) = \int_{x^2}^{\cos(e^x)} t^2 + \cos(t)\,dt,$$

$$F'(x) = (\cos e^x)^2\,(-\sin(e^x)\,e^x) + \cos(\cos(e^x))(-\sin(e^x)\,e^x) - \big(x^4(2x) + \cos(x^2)\,2x\big)$$