ANSWERS: 1a) $-x^3-x^2+x+C$ (b) $3\ln x+3x^{-1}-x^{-2}+C$ (c) $2x$ (d) 2^x

e) $-\cos x+\sin x+C$ (f) $1/3\,x^3-x^2+C$

1) $2/3\,x^3-3x+C$ (2) $e^{2x}+\cos x+C$ (3) $3x-3\ln x+C$ (4) $1/3t^3-t+1 \to t=-2.1$ no solution

(5) $F(x)=1/2\,x^2-1$

PRACTICE EXERCISE

1. Find the general antiderivative of the following functions.

a) $f(x)=-3x^2-2x+1$

b) $\frac{dy}{dx}=\frac{3}{x}-\frac{3}{x^2}+\frac{2}{x^3}$, for all $x\neq 0$

c) $y'=2$

d) $f(x)=x-\sec^2 x$

e) $f'(x)=\sin x+\cos x$

f) $f(x)=x(x-2)$

1. Find the antiderivative of $f(x)=2x^2-3$.

2. Find the antiderivative of $y'=2e^{2x}-\sin x$.

3. Find the antiderivative of $f'(x)=3-\frac{3}{x}$, where $x\neq 0$.

4. Solve the following differential equation with the given initial conditions given.

   $\frac{ds}{dt}=t^2-1$, where $s=1$ at $t=0$.

5. Find $F(x)$ given that $F'(x)=x$, and that the point $(1,-\frac{1}{2})$ lies on $F(x)$.