1) $\dfrac{dy}{dt} = \cos t - e^{-t} - 42t^5$ 1) ________

$(\sin u)\, u'$

$u = x^{14}$

$\dfrac{du}{dx} = 14x^{13}$

$u = -\cos(x^{14}) + C$

2) $\dfrac{du}{dx} = 14x^{13} \sin(x^{14})$ 2) ________

the initial value problem explicitly.

3) $\dfrac{dy}{dx} = 4e^x - \cos x$ and $y = 5$ when $x = 0$ 3) ________

$F(s) = \displaystyle\int_0^s \sqrt[5]{\cot t}\, dt + 3$

4) $\dfrac{dy}{dx} = 6x^2 - 4x + 15;\;\; y = 15$ when $x = 1$ 4) ________

2) $\dfrac{du}{dx} = 14x^{13} \sin(x^{14})$

(3)

$y = 4e^x - \sin x + C$

$5 = 4e^0 - \sin 0 + C$

$5 = 4 + 0 + C$ so....

$1 = C$

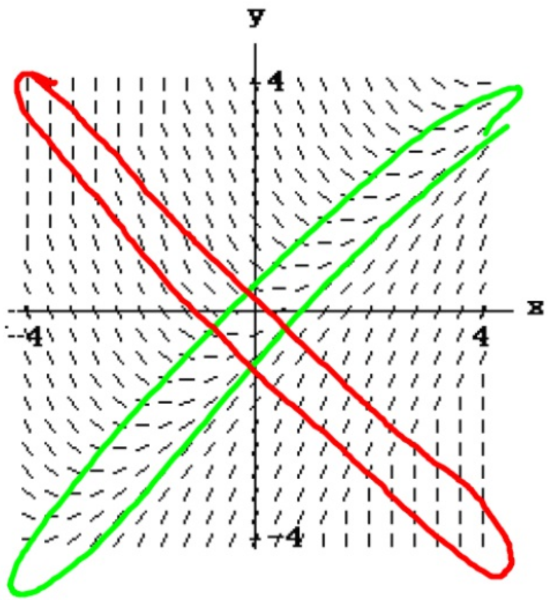
$y = 4e^x - \sin x + 1$

Solve the initial value problem explicitly.

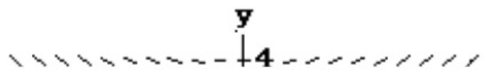
3) $\displaystyle\int \dfrac{dy}{dx} = \int 4e^x - \cos x$ and $y = 5$ when $x = 0$ 3)

4) $\dfrac{dy}{dx} = 6x^2 - 4x + 15;\;\; y = 15$ when $x = 1$ 4)

B)



C)



x	y	y'
1	1	0
2	2	0
3	3	0
4	4	0

x	y	y'
-1	-1	0
-2	-2	0
-3	-3	0
-4	-4	0

x	y	
0	1	-1
0	2	-2
0	3	-3

x	y	
1	0	1
2	0	2
3	0	3

Evaluate the integral.

7) $\int \tan(9x - 3)\, dx$

8) $\int x^2\sqrt{x^3 + 4}\, dx$

7) $\int \frac{\sin(9x-3)}{\cos(9x-3)}\, dx$

$\int \frac{u'}{u} = \ln|u| + C$

(since $\frac{d}{dx}(\ln x) = \frac{1}{x}$)

8) ______________

$u = \cos(9x-3)$

$du = -\sin(9x-3) \cdot 9\, dx$

$\frac{-1}{9} du = \sin(9x-3)\, dx$

so... $\int \frac{-1}{9}\left(\frac{1}{u}\right) du = -\frac{1}{9}\int \frac{1}{u} du$

$= \frac{-1}{9}\ln|u| + C$

$= \frac{-1}{9}\ln|\cos(9x-3)| + C$

$= \frac{1}{9}\ln$

Evaluate the integral.

7) $\int \tan(9x - 3)\,dx$

8) $\int x^2 \sqrt{x^3 + 4}\,dx$ 8) ______________

$\frac{1}{3} \cdot \frac{2}{3} = \frac{2}{9}$

$u = x^3 + 4$

$du = 3x^2\,dx$

$\frac{1}{3}du = x^2\,dx$

SO....

$\frac{1}{3}\int \sqrt{u}\,du = \frac{1}{3}\int u^{\frac{1}{2}}\,du = \frac{2}{9}u^{3/2} + C$

$= \frac{2}{9}(x^3+4)^{3/2} + C$

Solve the initial value problem.

9) $\frac{dy}{dx} = (x + 5) \cos x$ and $y = 2$ when $x = 0$

$\int u\,dv = uv - \int v\,du$

9) ____________

Use tabular integration to find the antiderivative.

10) $\int (x^2 - 8x) e^x \, dx$

10) ____________

9 $u = x+5 \quad dv = \cos x$

$du = dx \quad v = \sin x$

$= (x+5)(\sin x) - \int \sin x \, dx$

$= (x+5)(\sin x) - (-\cos x) + C = y$

$= (x+5)(\sin x)$

$2 = (0+5)(\sin 0) + \cos 0 + C$

$2 = 0 + 1 + C \quad C = 1$

$y = (x+5)(\sin x) + \cos x + 1$

Solve the initial value problem.

9) $\dfrac{dy}{dx} = (x + 5) \cos x$ and $y = 2$ when $x = 0$ — 9) ______________

u dv

Use tabular integration to find the antiderivative.

10) $\int (x^2 - 8x) e^x \, dx$ — 10) ______________

u		dv
x^2-8x	+	e^x
$2x-8$	−	e^x
2	+	e^x
0	−	e^x
		e^x

So...

$y = (x^2-8x)e^x - (2x-8)(e^x) + 2e^x + C$

$y = e^x(x^2-8x-2x+8+2)+C$

$e^x(x^2-10x+10)+C$

$y =$