Problem Set 54

2. $x(2) = -13$
   $v(2) = -14$
   $a(2) = -8$

4. $t \approx 4.082$ sec
   $h \approx 86.633$ m

6. $\ln 3 \approx 1.099$

8. 0.5

10. $3.14159 = \pi$

12. $\left(x^2 + 1\right)^{\frac{3}{2}} + C$

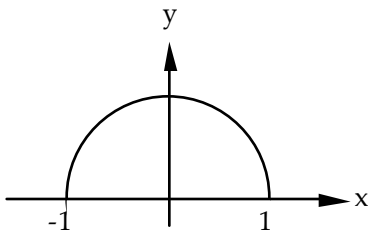
14 $(\ln x)^4 + C$

16. $\ln\left(\sin^2 x\right) + C$ or $2\ln|\sin x| + C$

18. $$\frac{dy}{dx} = \frac{2x^3 e^{x^2} \cos^2 x}{(x^2+1)^2} - \frac{e^{x^2}}{x^2+1}\sin(2x) + e^x \csc x(1 - \cot x)$$

20. C

22. using a definition of derivative: e^e

24. 

The integral represents the area of a semi-circle with a radius of 1.

Therefore, its value is $\frac{\pi}{2}$.