Calculus 1510 Tutorial #9

A, Integrate

1. $\int\left(x^4-\frac{1}{\sqrt[3]{x^2}}+e^x-x^\pi+\pi^e\right)dx$
2. $\int\left(2\sqrt{x}+3x^{\frac{2}{3}}-5x^{\frac{5}{2}}\right)dx$
3. $\int\sqrt{x}\left(x+1\right)dx$
4. $\int x^2\left(1+x^2\right)^2\,dx$
5. $\int\left(x+5\right)^{\frac{5}{2}}\,dx$
6. $\int\frac{1}{\sqrt{4x+3}}\,dx$
7. $\int 3e^{2x}\,dx$
8. $\int\frac{e^{\sqrt{x}}}{\sqrt{x}}\,dx$
9. $\int\frac{\left(\ln x\right)^3}{x}\,dx$
10. $\int\frac{\cos x}{\sin^3 x}\,dx$
11. $\int\frac{\sin\left(\frac{\pi}{x}\right)}{x^2}\,dx$

B. 12. Acceleration of an object moving along the *x*-axis with $0\le t\le 10$ is specified by $a\left(t\right)=120t-12t^2$. Furthermore, the velocity at $t = 0$ is 0 and the position of the particle at $t = 0$ is 4m. Find the velocity and position functions.

13. Find $f(2)$ if $f''\left(x\right)=18x+10$, $f'\left(1\right)=18$ and $f\left(0\right)=2$.