AP Calc Chapter 7 Review – Online Video

Find the limit of each. Use L'Hopital if needed.

1. $\lim_{x\to 0} \frac{sin7x}{tan11x}$

2. $\lim_{x\to 0}(\frac{1}{sinx} - \frac{1}{x})$

3. $\lim_{x\to \infty} \frac{x-2x^2}{3x^2+5x}$

4. $\lim_{x\to \infty} lnx \cdot e^{-2x}$

Find the derivative of each.

5. $y = \ln^4 x$

6. $f(x) = \frac{x^3}{2lnx}$

7. $y = 2^{-4x}$

8. $f(x) = \sin^{-1}(5x)$

9. $f(x) = 2\arcsin(3x)$

10. $f(x) = 3^{x-2}$

Integrate each.

11. $\int \frac{8}{\sqrt{36-x^2}} dx$

12. $\int \frac{8}{9+4x^2} dx$

13. $\int e^{3x+2} dx$

14. $\int 4^x \, dx$

15. $\int \frac{e^{-x}}{1+e^{-x}} dx$

16. Find $(f^{-1})'(a)$ for $f(x) = x^3 - \frac{4}{x}$ at a = 6.

17. The waitress pours coffee into your cup at 8:00 am. The coffee is 170^0 when freshly poured and after 3 minutes in a room at 72^0F, the coffee has cooled to 140^0F. Find the temperature at any time t and find the time at which the coffee is 100^0F.