Take the derivative of the following functions. **Do not simplify your answers.** You have 50 minutes to complete this exam. Please put a box around your final answers.

Name:_____

1. $f(x) = 2x^4 - 3x^2 + 5x + 2$

2. $f(x) = \sqrt{x} - \dfrac{1}{\sqrt{x}}$

3. $f(x) = 12x^4 + 3x^3 + 5x^{-2} - 4$

4. $f(x) = (x^3 + 7x^2 + 5)^5$

5. $f(x) = (6x - 5)^{-3}$

6. $f(x) = x^{-5}(4x^2 + 6)$

7. $f(x) = \dfrac{2x + 3}{3x + 2}$

8. $f(x) = \dfrac{x + x^3}{\sqrt{x}}$

9. $f(x) = \dfrac{x^2}{x^2 + 1}$

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

11. $f(x) = x\sqrt{1 - x^2}$

12. $f(x) = \dfrac{3}{\sqrt{2x + 1}}$

13. $f(x) = \cos(3x)$

14. $f(x) = x\cos x$

15. $f(x) = \sin(2x)\cos(3x)$

16. $f(x) = \sin^2 x + \cos^2 x$

17. $f(x) = \dfrac{\cos x}{1 + \sin x}$

18. $f(x) = \dfrac{1 - \sin x}{1 + \sin x}$

19. $f(x) = \sin(\cos x)$

20. $f(x) = (\sin x + \tan x)^{1/5}$

The End.