Section 6.2

1. Since $(e^{2x}+5)' = 2e^{2x}$, the answer is yes.

5. Since $(2e^{2x})' = 4e^{2x} \neq 2e^{2x}$, the answer is no.

6. Since $\left[e^{2x} + \int_o^1 e^{2t}\,dt\right] = 2e^{2x}$, the answer is yes.

12. Since the expression is a definite integral, it is a number.

13. Since the expression has an indefinite integral, it is a function.

19. $\frac{t^8}{8} + \frac{t^4}{4}$.

27. $\frac{x^3}{3} - 6(\frac{x^2}{2}) + 17x = \frac{x^3}{3} - 3x^2 + 17x.$

33. $F(x) = \frac{x^7}{7} - \frac{1}{7}(\frac{x^{-5}}{-5}) + C = \frac{x^7}{7} + \frac{1}{35}x^{-5} + C$

45.

$f(x) = 2 + 4x + 5x^2$, so $F(x) = 2x + 2x^2 + \frac{5}{3}x^3 + C$. $F(0) = 0$ implies that $C = 0$. Thus $F(x) = 2x + 2x^2 + \frac{5}{3}x^3$ is the only possibility.

63. $\frac{x^2}{2} + 2x^{1/2} + C$

66. $\frac{x^3}{3} + \ln|x| + C.$

71. $25e^{4x} + C$

87.

An antiderivative is $F(x) = 3x^2 - 5x + C$. Since $F(0) = 5$, we have $5 = 0 + C$, so $C = 5$. The answer is $F(x) = 3x^2 - 5x + 5$.