Fall 2019 Final Exam Answers

1. $y = -6x + 56$

2. C

3. D

4. 
\[
\frac{f(x+h) - f(x)}{h} = \frac{3(x+h)^2 - 2}{h} = \frac{5(x^2 + 2xh + h^2) - 2}{h}
\]
\[
f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h} = \frac{5x^2 + 6xh + h^2 - 2}{h}
\]
\[
f'(x) = 10x
\]

5. C

6. E

7. A

8. Abs. max. = 33, abs. min. = -31

9. There is no interval where $f$ is both decreasing and concave up

10. A

11. $r = 3, h = 18$

12. E

13. B

14. C