(1) C
(2) A
(3) A
(4) D
(5) A
(6) C
(7) B
(8) B
(9) D
(10) D

(11) Point-slope form: $y - y_1 = m(x - x_1)$
Let m equal slope and choose a point $(x_1, y_1) = (0, b)$, the y-intercept. Then,

$$\begin{aligned} y - y_1 &= m(x - x_1) \\ y - b &= m(x - 0) \\ y - b &= mx \\ y &= mx + b \equiv \text{slope-intercept form} \end{aligned}$$

(12) We are calculating the sum of a geometric series with 18 terms, so $n = 18$, and the common ratio, r, is 1.03 because we include the principal. Recall $a_n = a_1 r^{(n-1)}$,

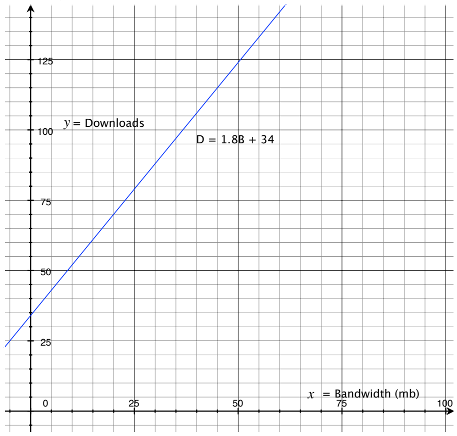
$$\begin{aligned} a_1 &= 100(1.03)^0 = 100 \text{ [equals the deposit on 18th birthday, which earns 0 interest]} \\ a_2 &= 100(1.03)^{2-1} = 103 \\ a_3 &= 100(1.03)^{3-1} = 106.09 \\ &\vdots \\ a_{18} &= 100(1.03)^{18-1} = 165.28 \text{ [equals deposit from 1st birthday, which earns 17 years of interest]} \end{aligned}$$

Now use the sum of a geometric series formula:

$$\begin{aligned} S_n &= \frac{ra_n - a_1}{r - 1} \\ S_{18} &= \frac{(1.03)a_{18} - a_1}{1.03 - 1} \\ &= \frac{(1.03)165.28 - 100}{0.03} \\ &= \frac{170.24 - 100}{0.03} = \$2,341.28\ldots \text{ Thanks grandma!} \end{aligned}$$

(13) An example of one solution is the exercise from class relating computer bandwidth (mb) to the number of downloads.

(i) Plot, with downloads on the vertical axis and bandwidth on the horizontal axis:



(ii) $d = 1.8b + 34$

(iii) The marginal effect is positive. An increase in bandwidth of 1 unit (mb) will *increase* the number of downloads by 1.8.

(14)

(i) If discriminant, $b^2 - 4ac$, is...

$$\begin{aligned} \text{positive} &\quad \ldots 2\ \mathbb{R} \text{ solutions} \\ \text{zero} &\quad \ldots 1\ \mathbb{R} \text{ solution} \\ \text{negative} &\quad \ldots 0\ \mathbb{R} \text{ solutions} \end{aligned}$$

(ii) A solution to any one-variable equation represents the value that when substituted for the variable results in a true mathematical statement. Another interpretation is the equation's graph's horizontal axis intercepts.

(EC) First, solve for b:

$$a + b + c = 0$$
$$b = -c - a$$

Now substitute into the quadratic formula:

$$
\begin{aligned}
x &= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(-c-a) \pm \sqrt{(-c-a)^2 - 4ac}}{2a} \\
&= \frac{(c+a) \pm \sqrt{(c^2 + 2ac + a^2) - 4ac}}{2a} = \frac{(c+a) \pm \sqrt{c^2 - 2ac + a^2}}{2a} \\
&= \frac{(c+a) \pm (c-a)}{2a} \text{ [from factoring perfect square, then taking its square root]} \\
x &= \frac{(c+a) + (c-a)}{2a} = \frac{2c}{2a} = \frac{c}{a} \\
x &= \frac{(c+a) - (c-a)}{2a} = \frac{2a}{2a} = 1
\end{aligned}
$$

GRADING SCALE

Raw Score	Final Score
29	100
28.5	99.5
27	98
26.5	97.5
25	96
24.5	95.5
22	93
21	92
20	91
19.5	88.125
19	87.5
17.5	85.625
16.5	84.375
16	83.75
16	83.75
14	80.5
13.5	79.85
13	79.2
12.5	78.55
12	77.9
11	76.6
10	73.4
9	72
8	70.6
7	69.2
6.5	68.5