Directions: Please answer the following questions and make sure your answer are legible. If you don’t show work and/or I can’t follow it, I won’t give partial credit. You may use a calculator (not the calculator function on other technology) and the Formula Sheet that I provide you, nothing else. Good Luck.

1. (2 points) Determine if the following sequence is Arithmetic, Geometric or Neither. If appropriate, indicate either the common difference $d$ or the common ratio $r$:

$\text{Geo, } r = \frac{54}{16} = 3 \text{ or } .3333\ldots$

162, 54, 18, 6, …

2. (8 points) You decide to start a savings challenge for yourself. This month (month 1) you will save $20 (i.e. you will deposit $20 into a piggy bank or savings account). The challenge you set forth for yourself is that each month you will increase the amount you save by $5.

(a) How much do you save in month 2?

(b) How much do you save in month 24?

(c) How much total have you saved in 2 years?

<table>
<thead>
<tr>
<th>Month</th>
<th>Add to Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
</tr>
</tbody>
</table>

Arith

$a_1 = 20$

$d = 5$

b) $a_{24} = 20 + (24-1)5$

$= 20 + 23 \cdot 5$

$= 115$

On month 24 you'll have $115

c) $S_{24} = \frac{24}{2}(20 + 115)$

$= 12(135)$

$= 1620$

You have saved a total of $1620

There is a question on the back!
3. (5 points) If Paula invests $6,375 in an investment that pays 5.05% annually compounded interest for 8 years:

(a) How much total interest did you earn (over the 8 years)?

(b) How much is the account worth (at the end of the 8 years)?

\[ FV = PV \left(1 + \frac{i}{100}\right)^n \]

\[ FV = 6375 \left(1 + \frac{0.0505}{1}\right)^{8} \]

\[ = 9454.74 \]

\[ b) \quad \text{Account is worth} \]

\[ 9454.72 \]

\[ a) \quad \text{Interest} = FV - PV \]

\[ = 9454.72 - 6375 \]

\[ = 3079.72 \]