This file is /conf/snippets/setHeader.pg you can use it as a model for creating files which introduce each problem set.

The primary purpose of WeBWorK is to let you know that you are getting the correct answer or to alert you if you are making some kind of mistake. Usually you can attempt a problem as many times as you want before the due date. However, if you are having trouble figuring out your error, you should consult the book, or ask a fellow student, one of the TA's or your professor for help. Don’t spend a lot of time guessing – it’s not very efficient or effective.

Give 4 or 5 significant digits for (floating point) numerical answers. For most problems when entering numerical answers, you can if you wish enter elementary expressions such as $2^3$ instead of 8, $\sin(3 \times \pi/2)$ instead of -1, $e^{\ln(2)}$ instead of 2, $(2 + \tan(3)) \times (4 - \sin(5)) \times 6 - 7/8$ instead of 27620.3413, etc. Here’s the list of the functions which WeBWorK understands.

You can use the Feedback button on each problem page to send e-mail to the professors.

1. (1 pt)
This is problem 2 Section 6.2 page 373.
Find the volume of the solid whose base is the region bounded by the x-axis and the semicircle $y = \sqrt{16-x^2}$ and which has the property that each cross section perpendicular to the x-axis is a square

\[ VOLUME = \text{(cubic units)} \]

Correct Answers:
- $256/3$

2. (1 pt)
This is problem 12 Section 6.2 page 373.
Find the volume of the solid whose base is the region bounded by the x-axis and the curve $y = e^x$ between $x = 1$ and $x = 3$ and which has the property that each cross section perpendicular to the x-axis is a semicircle

\[ VOLUME = \text{(cubic units)} \]

Correct Answers:
- $3.14159265/16 \times (\exp(6) - \exp(2))$

3. (1 pt)
This is problem 14 Section 6.2 page 373.
Find the volume of the solid formed when the region under the curve $y = \sqrt{7}$ on the interval $0 \leq x \leq 8$ is revolved about the x-axis using the method of disks or washers.

\[ VOLUME = \text{(cubic units)} \]

Correct Answers:
- $96\times3.14159265/5$

4. (1 pt)
This is problem 18 Section 6.2 page 373.
Find the volume of the solid formed when the region under the curve $y = \sqrt{2}\sin(x)$ on the interval $0 \leq x \leq \pi$ is revolved about the x-axis using the method of disks or washers.

\[ VOLUME = \text{(cubic units)} \]

Correct Answers:
- $4\times3.14159265$

5. (1 pt)
This is problem 42 Section 6.2 page 373.
In this exercise you will find the volume of the solid formed when the region bounded by the curves $y = x^3$ and $y = x^2$ is revolved about the y-axis.

(a) Using the method of disks the answer can be written as

\[ V = \pi \int_0^1 f(y) \, dy \]

\[ f(y) = \text{(expression)} \]

(b) Using the method of shells the answer can be written as

\[ V = 2\pi \int_0^1 g(x) \, dx \]

\[ g(x) = \text{(expression)} \]

(c) by either method the volume is given by

\[ V = \text{cubic units} \]

Correct Answers:
- $y^{(2/3)} - y$
- $x^{(3)} - y^{(4)}$
- $3.14159265/10$

6. (1 pt)
This is problem 44 Section 6.2 page 373.
In this exercise you will find the volume of the solid formed when the region bounded by $y = x$, $y = 2x$, and $y = 1$ is revolved about the y-axis.

(a) Using the method of disks the answer can be written as

\[ V = \pi \int_0^1 f(y) \, dy \]

\[ f(y) = \text{(expression)} \]

(b) Using the method of shells the answer can be written as

\[ V = 2\pi \int_0^{1/2} g_1(x) \, dx + 2\pi \int_{1/2}^1 g_2(x) \, dx \]

\[ g_1(x) = \text{(expression)} \]

\[ g_2(x) = \text{(expression)} \]

(c) by either method the volume is given by

\[ V = \text{cubic units} \]

Correct Answers:
<table>
<thead>
<tr>
<th>7. (1 pt)</th>
<th>8. (1 pt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is problem 4 Section 6.3 page 384.</td>
<td>This is problem 24 Section 6.3 page 385.</td>
</tr>
<tr>
<td>Identify each of the following curves using the capital letters</td>
<td>Find the points of intersection ((r, \theta)) of the curves</td>
</tr>
<tr>
<td>A, B, C, D, E, F or G where the letters correspond to</td>
<td>(r^2 = 9 \cos(2\theta)),</td>
</tr>
<tr>
<td>(A) cardioid; (B) rose; (C) lemniscate; (D) limacon; (E) circle; (F) line; (G) none of these:</td>
<td>(r = 3)</td>
</tr>
<tr>
<td>Note: On this problem you will only be allowed three attempts.</td>
<td>NOTE: Answers are in the form ((r_1, \theta_1)), ((r_2, \theta_2)), ... where</td>
</tr>
<tr>
<td>So think before you enter your answers.</td>
<td>if (r_j = r_{j+1}) then (\theta_j &lt; \theta_{j+1}).</td>
</tr>
<tr>
<td>(1) (r = 2 \sin(2\theta)) _________</td>
<td>(r_1 = \quad \theta_1 = \quad)</td>
</tr>
<tr>
<td>(2) (r^2 = 2 \cos(2\theta)) _________</td>
<td>(r_2 = \quad \theta_2 = \quad)</td>
</tr>
<tr>
<td>(3) (r = 5 \cos(60^\circ)) _________</td>
<td>(Correct Answers:)</td>
</tr>
<tr>
<td>(4) (r = 5 \sin(8\theta)) _________</td>
<td>* 3</td>
</tr>
<tr>
<td>(5) (r\theta = 3) _________</td>
<td>* 0</td>
</tr>
<tr>
<td>(6) (r^2 = 9 \cos(2\theta - \pi/4)) _________</td>
<td>* 3</td>
</tr>
<tr>
<td>(7) (r = \sin(3(\theta + \pi/6))) _________</td>
<td>* 3.14159265</td>
</tr>
<tr>
<td>(8) (\cos(\theta) = 1 - r) _________</td>
<td>(Correct Answers:)</td>
</tr>
</tbody>
</table>

Correct Answers:
- B
- C
- E
- A
- 3
- 3.14159265

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8. (1 pt)
This is problem 28 Section 6.3 page 385.
Find the points of intersection \((r, \theta)\) of the curves
\(r = 2(1 - \cos(\theta))\),
\(r = 4 \sin(\theta)\)

Note: In this problem the curves intersect at the pole and one other point. Only enter the answer for nonzero \(r\).

\(r = \quad \theta = \quad\) 

Correct Answers:
- \(4 \sin(\cos(-3/5))\)
- \(\cos(-3/5)\)