Please note the following correction(s):

<table>
<thead>
<tr>
<th>Page Number</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Answer choice (E) should be: (-2\sqrt{2} \sin \left(\frac{\sqrt{2}}{2}\right) \cos \left(\frac{\sqrt{2}}{2}\right)).</td>
</tr>
<tr>
<td>9</td>
<td>Question 30 should read: “… its velocity at any time ( t \geq 0 ) is given by …”</td>
</tr>
<tr>
<td>14</td>
<td>The last sentence on the page should read: “…we multiply the numerator and the denominator by 4:”</td>
</tr>
<tr>
<td>15 – 16</td>
<td>The answer and explanation for question 15 are both incorrect. The explanation should read:</td>
</tr>
<tr>
<td></td>
<td>( f(x) = \cos^2(\sin(2x)) = (\cos(\sin(2x)))^2 )</td>
</tr>
<tr>
<td></td>
<td>Now use ( u ) substitutions:</td>
</tr>
<tr>
<td></td>
<td>[ f(x) = (\cos(\sin(2x)))^2 ]</td>
</tr>
<tr>
<td></td>
<td>[ u = \sin(2x) ]</td>
</tr>
<tr>
<td></td>
<td>[ du = 2\cos(2x)dx ]</td>
</tr>
<tr>
<td></td>
<td>[ f(u) = (\cos u)^2 ]</td>
</tr>
<tr>
<td></td>
<td>[ h = \cos u ]</td>
</tr>
<tr>
<td></td>
<td>[ dh = -\sin u du ]</td>
</tr>
<tr>
<td></td>
<td>[ f(h) = (h)^2 ]</td>
</tr>
<tr>
<td></td>
<td>[ \frac{df(h)}{dh} = 2(h)dh ]</td>
</tr>
<tr>
<td></td>
<td>[ \frac{df(u)}{du} = 2\cos u \cdot (-\sin u)du = -2\sin u \cos u = ]</td>
</tr>
<tr>
<td></td>
<td>[ \frac{df(x)}{dx} = 2\cos(\sin(2x)) \cdot (-\sin(2x)) \cdot 2\cos(2x)dx ]</td>
</tr>
<tr>
<td></td>
<td>[ \frac{df(x)}{dx} = -4\sin(2x) \cos(\sin(2x)) \cos 2xdx ]</td>
</tr>
<tr>
<td></td>
<td>[ x = \frac{\pi}{8} ]</td>
</tr>
<tr>
<td></td>
<td>[ f'\left(\frac{\pi}{8}\right) = -4\sin\left(\frac{\pi}{4}\right) \cos\left(\frac{\pi}{4}\right) \cos \frac{\pi}{4} ]</td>
</tr>
<tr>
<td></td>
<td>[ = -4\sin\left(\frac{\sqrt{2}}{2}\right) \cos \left(\frac{\sqrt{2}}{2}\right) \frac{\sqrt{2}}{2} ]</td>
</tr>
<tr>
<td></td>
<td>[ = -2\sqrt{2} \sin \left(\frac{\sqrt{2}}{2}\right) \cos \left(\frac{\sqrt{2}}{2}\right) ]</td>
</tr>
</tbody>
</table>
| 16 – 17 | The answer for question 17 should be (A), not (D).

At the bottom of page 16 in the answer explanation for question 17, the sentence beginning “Using the chain rule, …” has an error at the end of the line. The end of the line should read:

$$\ldots = 4 \cos \left( \frac{\pi}{4} + \frac{3\pi}{4} \right) = -4$$

At the top of page 17, the first sentence should read:

“Using the point-slope form, we conclude that the equation of the tangent line is $$y - \frac{\pi}{2} = -4x.$$”

| 50 | The first sentence in the last paragraph should read “… whose product equals 12 and whose sum equals −8.”

| 58 | The second sentence on the page should read “… that intercepts the x–axis at (−3, 0) and (−1, 0).”

| 68 | The graph in answer choice A is missing the left most part of the graph of the inverse of $$f(x) = x^3 - 5$$. The graph should appear as follows:

| 72 | The second to the last sentence on the page should read “For example, the ordered pair (0, −5) for $$f(x)$$ would be (−5, 0) for $$f^{-1}$$.”

| 78 | The equation for the slope in the middle of the page should be:

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - 1}{-2 - (−2)} = \frac{-2}{0} = \text{undefined}$$

| 92 | The answer for question 6 should be E, not A.

| 92 | In the explanation for question 6, the set of 3 equations should be followed by: “2x + 18y = 3”.

| 92 | The following sentence should be inserted at the beginning of the last paragraph in the explanation of question 6.

“Since $$\frac{2}{3}x + 6y = 1$$ does not have all integer coefficients, (A) is incorrect.”

| 118 | In number 2, rule 4, the condition listed as “(for L > 0, if n is even)” should read
<table>
<thead>
<tr>
<th>Problem Number</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>124</td>
<td>The first sentence in the second paragraph should read: “… the function (\frac{x^2 - 1}{x - 1}) and (x + 1) are identical …”</td>
</tr>
<tr>
<td>132</td>
<td>In part (b), the third line should read: [\lim_{x \to \pi^+} \cot x = \lim_{x \to \pi^+} \frac{\cos x}{\sin x} = \lim_{x \to \pi^+} \frac{\cos \pi}{\sin \pi} = \frac{-1}{0} \neq 1.]</td>
</tr>
<tr>
<td>134</td>
<td>The beginning of answer choice (D) should read: (\lim_{x \to b} g(x)) DNE and has… (The equal sign should be deleted.) The beginning of answer choice (E) should read: (\lim_{x \to b} g(x)) DNE and has… (The equal sign should be deleted.)</td>
</tr>
<tr>
<td>135</td>
<td>In question 3, answer choice (A) should be (\frac{5}{4}), and answer choice (D) should be (-\frac{5}{4}).</td>
</tr>
<tr>
<td>137</td>
<td>The last line in the answer explanation for question 3 should read: [\frac{-2}{3} - 3 = \frac{-5}{4} = \frac{5}{4}.]</td>
</tr>
<tr>
<td>138</td>
<td>The line below the second table should read: (\lim_{x \to 2} \frac{x + 3}{x - 2}) DNE because … (The equal sign should be deleted.)</td>
</tr>
<tr>
<td>142</td>
<td>In the last row of the table, in the third column, the last formula should read: [\frac{d}{dx} (\csc x) = -\csc x \cot x.]</td>
</tr>
<tr>
<td>148</td>
<td>The last fraction shown at the bottom of the page should be: [-19 \quad \frac{-(2x - 3)^2}{(2x - 3)^2}.]</td>
</tr>
<tr>
<td>152</td>
<td>The ninth line down from the top should read: [\frac{1}{2} \left( x^2 + 4x + 7 \right)^{13} \cdot (2x + 4)]</td>
</tr>
<tr>
<td>155</td>
<td>Insert towards the bottom of the page after the phrase “The derivative of the left hand side with respect to (x) is”: [14 \left( x^2 + 4x + 7 \right)^{13} \cdot (2x + 4)]</td>
</tr>
</tbody>
</table>
\[
\frac{d}{dx}(y \sin xy^2) = \frac{d}{dx}(y) \cdot \sin xy^2 + y \cdot \frac{d}{dx}(\sin xy^2)
\]
\[
= \sin xy^2 + y \cdot \frac{d}{dx}(\sin xy^2)
\]
\[
= \sin xy^2 + y(\cos xy^2) \frac{d}{dx}(xy^2)
\]
\[
= \sin xy^2 + y(\cos xy^2)(x \cdot 2y + 1 \cdot y^2) \frac{dy}{dx}
\]
\[
= \sin xy^2 + y(\cos xy^2)(y^2 + 2xy) \frac{dy}{dx}
\]
\[
= \sin xy^2 + (y^3 + 2xy^2) \cos xy^2 \frac{dy}{dx}
\]

The derivative of the right hand side with respect to \(x\) is
\[
\frac{d}{dx}(\cos x) = -\sin x
\]

Therefore,
\[
\frac{d}{dx}(y \sin xy^2) = \frac{d}{dx}(\cos x)
\]
\[
\sin xy^2 + (y^3 + 2xy^2) \cos xy^2 \frac{dy}{dx} = -\sin x
\]
\[
(y^3 + 2xy^2) \cos xy^2 \frac{dy}{dx} = -\sin x - \sin xy^2
\]
\[
\frac{dy}{dx} = \frac{-\sin x - \sin xy^2}{(y^3 + 2xy^2) \cos xy^2}
\]

163 On the graph, “\(r\)” should be removed.
164 On the graph, “\(f\)” should be removed.
168 The last two lines on the page should read:

“\(x = 0\) or \(x = \pi\) or \(x = 2\pi\)

The critical points are \(x = 0\), \(x = \pi\), and \(x = 2\pi\).”

171 In the third row of the table, the third column should read:

\(f'(1) = (3)(–1)\)

= –3

Negative

The fourth column should read:

\(f'(4) = (12)(2)\)

= 24

Positive
In the last row of the table, the first column should read: “Concavity of $f(x)$”

The graph for answer choice A should be:

![Graph](image)

The third bullet in the answer explanation for question 5 should read: “$f(x)$ has another relative minimum at $x = 1$.”

In the third row of the table at the bottom of the page, column 2 should read:

\[
s''(-2) = (-2+1)(-2-3)(+)
= (-)(-)(+) = (+)
\]

positive

Column 3 should read:

\[
s''(0) = (0+1)(0-3)(+)
=(+)(-)(+) = (-)
\]

negative

In the third row of formulas, in the first column, the sixth formula should read:

\[
\frac{d}{dx}(-\csc x) = \csc x \cot x.
\]

Toward the bottom of the page, the last sentence should read:

“On the interval $\frac{\pi}{3} \leq x \leq \frac{\pi}{2}$.”

In the table in question 6, the entry at the bottom of the first column should be $F(x)$ not $f(x)$.

The answer for part (b) should be:

We are bounded by the lines $y = x^2$, $x = 1$, $x = 2$, and the $x$ axis. The outer radius of our solid is dictated by $y = x^2$ for $1 \leq y \leq 4$ and then by $x = 1$ for $0 \leq y \leq 1$ (as we finish on the $x$ axis). Therefore: $R = x = 4 - \sqrt{y}$. We can see this is the case because the solid is being revolved around $x = 4$ and as $y$ increases the radius will decrease as it is constrained by $y = x^2$. Because the
solid is also constrained by $x = 1$, we’ll split the integrand into 2 sections as follows: $\int_0^1 A_1(y)dy + \int_1^4 A_2(y)dy$. This being the case, let’s begin with $\int_1^4 A(y)dy$.

To find $A(y)$, we must find the outermost area and subtract the innermost area which will result in the area of the washer. Therefore,

$$A(y) = \pi R_0^2 - \pi R_1^2 = \pi(4 - \sqrt{y})^2 - \pi(2)^2 = \pi((16 - 8\sqrt{y} + y) - 4) = \pi(12 - 8\sqrt{y} + y)$$

Now, we must integrate:

$$V = \pi \int_1^4 A(y)dy = \pi \int_1^4 (12 - 8\sqrt{y} + y)dy = \pi \left( 12y - \frac{16y^{\frac{3}{2}}}{3} + \frac{y^2}{2} \right)_{1}^{4}$$

$$= \pi \left( 12(4) - \frac{16(4)^{\frac{3}{2}}}{3} + \frac{(4)^2}{2} \right) - \left( 12(1) - \frac{16(1)^{\frac{3}{2}}}{3} + \frac{(1)^2}{2} \right)$$

$$= \pi \left( 48 - \frac{128}{3} + \frac{16}{2} \right) - \left( 12 - \frac{16}{3} + \frac{1}{2} \right)$$

$$= \pi \left( 48 - 12 + \frac{16}{3} - \frac{128}{3} + \frac{16}{2} - \frac{1}{2} \right)$$

$$= \pi \left( 36 - \frac{112}{3} + \frac{15}{2} \right) = \pi \left( \frac{216}{6} - \frac{224}{6} + \frac{45}{6} \right)$$

$$V = \frac{37}{6} \pi$$

Next, the other section can be obtained without calculus as it is a simple hollow cylinder:

$$A(y) = \pi R_o^2 - \pi R_i^2 = \pi(3)^2 - \pi(2)^2 = \pi(9 - 4) = \pi(5)$$

$$A(y) = 5\pi$$

$$V_c = A(y) \cdot l = 5\pi(1 - 0) = 5\pi(1)$$

$$V_c = 5\pi$$

Lastly, we add these two amounts together to obtain the total volume of our solid:

$$V = \frac{37}{6} \pi + \frac{30}{6} \pi$$

$$V = \frac{67}{6} \pi = 35.1$$

In question 5, answer choice (D) should be $\frac{16}{3}$ not $\frac{4}{3}$.
The calculation for $R_1$ should be:

$$
R_1 = \int_0^2 0 - (x - 2) \, dx \\
= \int_0^2 (-x + 2) \, dx \\
= \int_0^2 -x \, dx + \int_0^2 2 \, dx \\
= \left[ -\frac{1}{2}x^2 + 2x \right]_0^2 \\
= \left[ -\frac{1}{2}(2)^2 + 2(2) \right] - 0 \\
= -2 + 4 \\
= 2
$$

The third and fourth lines from the top of the page should read:

$$
= 2 + \frac{4\sqrt{2}}{3} + \frac{10 - 4\sqrt{2}}{3} \\
= \frac{16}{3}
$$

The solution and explanation given actually calculates the “net” distance traveled, not the “total” distance traveled. The total distance traveled is $\frac{5}{6}$ to the right (on $[0,1]$), $\frac{1}{6}$ to the left (on $[1,2]$) and $\frac{5}{6}$ to the right (on $[2,3]$) for a total distance of $\frac{11}{6}$, not $3/2$.

The beginning of question 6 should read:

“A particle begins at the origin and moves along the $x$-axis so that …”

The first sentence at the top of the page should read:

“For problems 8 and 9, a particle moves along the $x$-axis so that its velocity at any time $t \geq 0$ is given by $v(t) = 5t^2 - 4t + 7$.”

The answer for question 1 should be (D). The last two sentences in the answer explanation for question 1 should be:

“By inspection, the slope of the line tangent to the curve at point D is the greatest. Therefore, the particle’s instantaneous velocity is greatest at point D.”