a. $\frac{4}{15}$

b. $\frac{1}{5}$

c. $\frac{3}{10}$

d. $\frac{7}{30}$

e. $\frac{1}{6}$

The right answer is d

Your answer was Unanswered

Here is one way of doing this problem:

Recall that

$$
\begin{aligned}
{}_{t|u}q_x &= \frac{s(x+t)-s(x+t+u)}{s(x)} \\
{}_{8|14}q_{40} &= \frac{s(40+8)-s(40+8+14)}{s(40)} \\
&= \frac{100-(40+8)-(100+40+8+14)}{100-40} \\
&= \frac{7}{30}
\end{aligned}
$$

The time is 9:19

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3. You are given the following extract from a select-and-ultimate mortality table with a two year select period:

x	$l_{[x]}$	$l_{[x]+1}$	l_{x+2}	$x+2$
60	**80,649**	**79,953**	**78,814**	62
61	79,137	78,402	77,252	63
62	77,575	76,770	75,578	64

Assume UDD between integral ages, calculate ${}_{0.8}q_{[60]+0.7}$.

a. 0.0097

b. 0.0094

c. 0.0104
d. 0.0098
e. 0.0105

The right answer is a

Your answer was Unanswered

Here is one way of doing this problem:

Recall that under UDD one has

$$l_{[x]+t} = tl_{[x]+1} + (1-t)l_{[x]} \quad 0 \le t \le 1$$

Using the above we get

$$\begin{aligned} l_{[60]+0.7} &= 0.7(79{,}953) + (1-0.7)(80{,}649) = 80161.8 \\ l_{[60]+1.5} &= 0.5(78{,}814) + (1-0.5)(79{,}953) = 79383.5 \\ {}_{0.8}q_{[60]+0.7} &= \frac{80161.8 - 79383.5}{80161.8} = 0.0097 \end{aligned}$$

The time is 9:19

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4. Suppose that

$$f(x) = \frac{2(a-x)}{a^2}, \quad 0 \le x \le a$$

Find $\mu(x)$.

a. $\frac{1}{a-x}$
b. $\frac{2}{(a-x)^2}$
c. $\frac{2}{a-x}$
d. $\frac{(a-x)^2}{a^2}$
e. $\frac{1}{(a-x)^2}$

The right answer is c

Your answer was Unanswered

Here is one way of doing this problem: