Lenguajes de Programación - Tarea 3

Integrantes

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Ejercicios

1. Evalúa las siguientes expresiones usando el régimen de evaluación y alcance especificado en cada inciso.

- **(a)**

```
{with {x {+ 2 2}}
    {with {y {+ x x}}
        {with {foo {fun {a} {- a y}}}
            {with {x {- 2 2}}
                {with {y {- x x}}
                    {foo -3}}}}}}
```

- Evaluación glotona y alcance estático.

    Solución:

Evaluación	Pila de ejecución
```{with {x {+ 2 2}}` ` {with {y {+ x x}}` ` {with {foo {fun {a} {- a y}}}` ` {with {x {- 2 2}}` ` {with {y {- x x}}` ` {foo -3}}}}}}```	`-----------------------------`
```{with {y {+ x x}}` ` {with {foo {fun {a} {- a y}}}` ` {with {x {- 2 2}}` ` {with {y {- x x}}` ` {foo -3}}}}}```	`-----------------------------` `    x   |        4` `-----------------------------`
```{with {foo {fun {a} {- a y}}}` ` {with {x {- 2 2}}` ` {with {y {- x x}}` ` {foo -3}}}}```	`-----------------------------` `    y   |        8` `-----------------------------` `    x   |        4` `-----------------------------`
```{with {x {- 2 2}}` ` {with {y {- x x}}` ` {foo -3}}}```	`-----------------------------` `    foo |  {fun {a} {- a y}}` `-----------------------------` `    y   |        8` `-----------------------------` `    x   |        4` `-----------------------------`
```{with {y {- x x}}` ` {foo -3}}```	`-----------------------------` `    x   |        0` `-----------------------------` `    foo |  {fun {a} {- a y}}` `-----------------------------` `    y   |        8` `-----------------------------` `    x   |        4` `-----------------------------`

```{foo -3}```	`-----------------------------`
	`    y   |        0`
	`-----------------------------`
	`    x   |        0`
	`-----------------------------`
	`>   foo |  {fun {a} {- a y}}`
	`-----------------------------`
	`    y   |        8`
	`-----------------------------`
	`    x   |        4`
	`-----------------------------`

```{{fun {a} {- a 8}} -3}```	

```
    --------------------------------
        y   |         0
    --------------------------------
        x   |         0
    --------------------------------
  >  foo  |   {fun {a} {- a y}}
    --------------------------------
        y   |         8
    --------------------------------
        x   |         4
    --------------------------------
```

```
{- -3 8}
```

```
    --------------------------------
        y   |         0
    --------------------------------
        x   |         0
    --------------------------------
  >  foo  |   {fun {a} {- a y}}
    --------------------------------
        y   |         8
    --------------------------------
        x   |         4
    --------------------------------
```

```
-11
```

```
    --------------------------------
        y   |         0
    --------------------------------
        x   |         0
    --------------------------------
  >  foo  |   {fun {a} {- a y}}
    --------------------------------
        y   |         8
    --------------------------------
        x   |         4
    --------------------------------
```

- Evaluación glotona y alcance dinámico.

Solución:

Evaluación	Pila de ejecución
| ```
{with {x {+ 2 2}}
    {with {y {+ x x}}
        {with {foo {fun {a} {- a y}}}
            {with {x {- 2 2}}
                {with {y {- x x}}
                    {foo -3}}}}}}
``` | ```
------------------------------
``` |
| ```
{with {y {+ x x}}
    {with {foo {fun {a} {- a y}}}
        {with {x {- 2 2}}
            {with {y {- x x}}
                {foo -3}}}}}
``` | ```
------------------------------
  x   |        4
------------------------------
``` |
| ```
{with {foo {fun {a} {- a y}}}
    {with {x {- 2 2}}
        {with {y {- x x}}
            {foo -3}}}}
``` | ```
------------------------------
  y   |        8
------------------------------
  x   |        4
------------------------------
``` |
| ```
{with {x {- 2 2}}
    {with {y {- x x}}
        {foo -3}}}
``` | ```
------------------------------
  foo  |  {fun {a} {- a y}}
------------------------------
  y   |        8
------------------------------
  x   |        4
------------------------------
``` |
| ```
{with {y {- x x}}
    {foo -3}}
``` | ```
------------------------------
  x   |        0
------------------------------
  foo  |  {fun {a} {- a y}}
------------------------------
  y   |        8
------------------------------
  x   |        4
------------------------------
``` |
| ```
{foo -3}
``` | ```
------------------------------
    y   |        0
------------------------------
    x   |        0
------------------------------
>  foo  |  {fun {a} {- a y}}
------------------------------
    y   |        8
------------------------------
    x   |        4
------------------------------
``` |
| ```
{{fun {a} {- a y}} -3}
``` | |

```
--------------------------------
  y   |        0
--------------------------------
  x   |        0
--------------------------------
> foo  |  {fun {a} {- a y}}
--------------------------------
  y   |        8
--------------------------------
  x   |        4
--------------------------------
```

{- -3 y}

```
--------------------------------
>  y   |        0
--------------------------------
   x   |        0
--------------------------------
  foo  |  {fun {a} {- a y}}
--------------------------------
   y   |        8
--------------------------------
   x   |        4
--------------------------------
```

{- -3 0}

```
--------------------------------
>  y   |        0
--------------------------------
   x   |        0
--------------------------------
  foo  |  {fun {a} {- a y}}
--------------------------------
   y   |        8
--------------------------------
   x   |        4
--------------------------------
```

-3

{- -3 y}

```
--------------------------------
>  y   |        0
--------------------------------
   x   |        0
--------------------------------
  foo  |  {fun {a} {- a y}}
--------------------------------
   y   |        8
--------------------------------
   x   |        4
--------------------------------
```

- Evaluación glotona y alcance estático.

Solución:

Evaluación	Pila de ejecución

``
{with {x {+ 2 2}}
    {with {y {+ x x}}
        {with {foo {fun {a} {- a y}}}
            {with {x {- 2 2}}
                {with {y {- x x}}
                    {foo -3}}}}}}
``
	``
	------------------------------ 	
	``

``
{with {y {+ x x}}
    {with {foo {fun {a} {- a y}}}
        {with {x {- 2 2}}
            {with {y {- x x}}
                {foo -3}}}}}
``
	``
	------------------------------ 	
	   x
		4
		------------------------------ 	
		``

``
{with {foo {fun {a} {- a y}}}
    {with {x {- 2 2}}
        {with {y {- x x}}
            {foo -3}}}}
``
	``
	------------------------------ 	
	   y
		8
		------------------------------ 	
		   x
			4
			------------------------------ 	
			``

``
{with {x {- 2 2}}
    {with {y {- x x}}
        {foo -3}}}
``
	``
	------------------------------ 	
	  foo
		{fun {a} {- a y}}
		------------------------------ 	
		   y
			8
			------------------------------ 	
			   x
				4
				------------------------------ 	
				``

``
{with {y {- x x}}
    {foo -3}}
``
	``
	------------------------------ 	
	   x
		0
		------------------------------ 	
		  foo
			{fun {a} {- a y}}
			------------------------------ 	
			   y
				8
				------------------------------ 	
				   x
					4
					------------------------------ 	
					``

``
{foo -3}
``
	``
	------------------------------ 	
	   y
		0
		------------------------------ 	
		   x
			0
			------------------------------ 	
			> foo
				{fun {a} {- a y}}
				------------------------------ 	
				   y
					8
					------------------------------ 	
					   x
						4
						------------------------------ 	
						``

``` {{fun {a} {- a y}} -3} ```	

```
--------------------------------
 y   |        0
--------------------------------
 x   |        0
--------------------------------
 foo |  {fun {a} {- a y}}
--------------------------------
 y   |        8
--------------------------------
 x   |        4
--------------------------------
```

`{- -3 y}`

```
--------------------------------
    y   |        0
--------------------------------
    x   |        0
--------------------------------
   foo  |  {fun {a} {- a y}}
--------------------------------
>   y   |        8
--------------------------------
    x   |        4
--------------------------------
```

`{- -3 8}`

```
--------------------------------
    y   |        0
--------------------------------
    x   |        0
--------------------------------
   foo  |  {fun {a} {- a y}}
--------------------------------
>   y   |        8
--------------------------------
    x   |        4
--------------------------------
```

`-11`

```
--------------------------------
    y   |        0
--------------------------------
    x   |        0
--------------------------------
   foo  |  {fun {a} {- a y}}
--------------------------------
>   y   |        8
--------------------------------
    x   |        4
--------------------------------
```

- Evaluación perezosa y alcance estático.

Solución:

Evaluación	Pila de ejecución
| ```
{with {x {+ 2 2}}
    {with {y {+ x x}}
        {with {foo {fun {a} {- a y}}}
            {with {x {- 2 2}}
                {with {y {- x x}}
                    {foo -3}}}}}}
``` | ```
-----------------------------
``` |
| ```
{with {y {+ x x}}
    {with {foo {fun {a} {- a y}}}
        {with {x {- 2 2}}
            {with {y {- x x}}
                {foo -3}}}}}
``` | ```
-----------------------------
  x   |     {+ 2 2}
-----------------------------
``` |
| ```
{with {foo {fun {a} {- a y}}}
    {with {x {- 2 2}}
        {with {y {- x x}}
            {foo -3}}}}
``` | ```
-----------------------------
  y   |     {+ x x}
-----------------------------
  x   |     {+ 2 2}
-----------------------------
``` |
| ```
{with {x {- 2 2}}
    {with {y {- x x}}
        {foo -3}}}
``` | ```
-----------------------------
 foo  |  {fun {a} {- a y}}
-----------------------------
  y   |     {+ x x}
-----------------------------
  x   |     {+ 2 2}
-----------------------------
``` |
| ```
{with {y {- x x}}
    {foo -3}}
``` | ```
-----------------------------
  x   |     {- 2 2}
-----------------------------
 foo  |  {fun {a} {- a y}}
-----------------------------
  y   |     {+ x x}
-----------------------------
  x   |     {+ 2 2}
-----------------------------
``` |
| ```
{foo -3}
``` | ```
-----------------------------
   y   |     {- x x}
-----------------------------
   x   |     {- 2 2}
-----------------------------
>  foo |  {fun {a} {- a y}}
-----------------------------
   y   |     {+ x x}
-----------------------------
   x   |     {+ 2 2}
-----------------------------
``` |
| ```
{{fun {a} {- a y}} -3}
``` | |

```
------------------------------
    y    |      {- x x}
------------------------------
    x    |      {- 2 2}
------------------------------
>  foo   |   {fun {a} {- a y}}
------------------------------
    y    |      {+ x x}
------------------------------
    x    |      {+ 2 2}
------------------------------
```

`{- -3 y}`

```
------------------------------
    y    |      {- x x}
------------------------------
    x    |      {- 2 2}
------------------------------
   foo   |   {fun {a} {- a y}}
------------------------------
>   y    |      {+ x x}
------------------------------
    x    |      {+ 2 2}
------------------------------
```

`{- -3 {+ x x}}`

```
------------------------------
    y    |      {- x x}
------------------------------
    x    |      {- 2 2}
------------------------------
   foo   |   {fun {a} {- a y}}
------------------------------
    y    |      {+ x x}
------------------------------
>   x    |      {+ 2 2}
------------------------------
```

`{- -3 {+ {+ 2 2} {+ 2 2}}}`

```
------------------------------
    y    |      {- x x}
------------------------------
    x    |      {- 2 2}
------------------------------
   foo   |   {fun {a} {- a y}}
------------------------------
    y    |      {+ x x}
------------------------------
>   x    |      {+ 2 2}
------------------------------
```

`{- -3 {+ 4 4}}`

```
------------------------------
    y    |      {- x x}
------------------------------
    x    |      {- 2 2}
------------------------------
   foo   |   {fun {a} {- a y}}
------------------------------
    y    |      {+ x x}
------------------------------
>   x    |      {+ 2 2}
------------------------------
```

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```
{- -3 8}
```

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```
------------------------------
  y    |     {- x x}
------------------------------
  x    |     {- 2 2}
------------------------------
 foo   |  {fun {a} {- a y}}
------------------------------
  y    |     {+ x x}
------------------------------
> x    |     {+ 2 2}
------------------------------
```

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```
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```

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```
------------------------------
  y    |     {- x x}
------------------------------
  x    |     {- 2 2}
------------------------------
 foo   |  {fun {a} {- a y}}
------------------------------
  y    |     {+ x x}
------------------------------
> x    |     {+ 2 2}
------------------------------
```

</td>
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</table>

- Evaluación perezosa y alcance dinámico.

Solución:

```
{- -3 8}
```

```
------------------------------
  y    |     {- x x}
------------------------------
  x    |     {- 2 2}
------------------------------
 foo   |  {fun {a} {- a y}}
------------------------------
  y    |     {+ x x}
------------------------------
> x    |     {+ 2 2}
------------------------------
```

Evaluación	Pila de ejecución
```{with {x {+ 2 2}}` ` {with {y {+ x x}}` ` {with {foo {fun {a} {- a y}}}` ` {with {x {- 2 2}}` ` {with {y {- x x}}` ` {foo -3}}}}}}```	`-----------------------------`
```{with {y {+ x x}}` ` {with {foo {fun {a} {- a y}}}` ` {with {x {- 2 2}}` ` {with {y {- x x}}` ` {foo -3}}}}}```	`-----------------------------` `  x   |     {+ 2 2}` `-----------------------------`
```{with {foo {fun {a} {- a y}}}` ` {with {x {- 2 2}}` ` {with {y {- x x}}` ` {foo -3}}}}```	`-----------------------------` `  y   |     {+ x x}` `-----------------------------` `  x   |     {+ 2 2}` `-----------------------------`
```{with {x {- 2 2}}` ` {with {y {- x x}}` ` {foo -3}}}```	`-----------------------------` `  foo | {fun {a} {- a y}}` `-----------------------------` `  y   |     {+ x x}` `-----------------------------` `  x   |     {+ 2 2}` `-----------------------------`
```{with {y {- x x}}` ` {foo -3}}```	`-----------------------------` `  x   |     {- 2 2}` `-----------------------------` `  foo | {fun {a} {- a y}}` `-----------------------------` `  y   |     {+ x x}` `-----------------------------` `  x   |     {+ 2 2}` `-----------------------------`

`{foo -3}`	`-----------------------------`
	`    y   |     {- x x}`
	`-----------------------------`
	`    x   |     {- 2 2}`
	`-----------------------------`
	`>   foo | {fun {a} {- a y}}`
	`-----------------------------`
	`    y   |     {+ x x}`
	`-----------------------------`
	`    x   |     {+ 2 2}`
	`-----------------------------`

`{{fun {a} {- a y}} -3}`	

```
------------------------------
    y    |      {- x x}
------------------------------
    x    |      {- 2 2}
------------------------------
>  foo   |  {fun {a} {- a y}}
------------------------------
    y    |      {+ x x}
------------------------------
    x    |      {+ 2 2}
------------------------------
```

`{- -3 y}`

```
------------------------------
>   y    |      {- x x}
------------------------------
    x    |      {- 2 2}
------------------------------
   foo   |  {fun {a} {- a y}}
------------------------------
    y    |      {+ x x}
------------------------------
    x    |      {+ 2 2}
------------------------------
```

`{- -3 {- x x}}`

```
------------------------------
    y    |      {- x x}
------------------------------
>   x    |      {- 2 2}
------------------------------
   foo   |  {fun {a} {- a y}}
------------------------------
    y    |      {+ x x}
------------------------------
    x    |      {+ 2 2}
------------------------------
```

`{- -3 {- {- 2 2} {- 2 2}}}`

```
------------------------------
    y    |      {- x x}
------------------------------
>   x    |      {- 2 2}
------------------------------
   foo   |  {fun {a} {- a y}}
------------------------------
    y    |      {+ x x}
------------------------------
    x    |      {+ 2 2}
------------------------------
```

`{- -3 {- 0 0}}`

```
------------------------------
    y    |      {- x x}
------------------------------
>   x    |      {- 2 2}
------------------------------
   foo   |  {fun {a} {- a y}}
------------------------------
    y    |      {+ x x}
------------------------------
    x    |      {+ 2 2}
------------------------------
```

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```
{- -3 0}
```

</td>
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```
------------------------------
    y   |      {- x x}
------------------------------
>   x   |      {- 2 2}
------------------------------
   foo  |  {fun {a} {- a y}}
------------------------------
    y   |      {+ x x}
------------------------------
    x   |      {+ 2 2}
------------------------------
```

</td>
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```
-3
```

</td>
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```
------------------------------
    y   |      {- x x}
------------------------------
>   x   |      {- 2 2}
------------------------------
   foo  |  {fun {a} {- a y}}
------------------------------
    y   |      {+ x x}
------------------------------
    x   |      {+ 2 2}
------------------------------
```

</td>
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</table>

- **(b)**

```
{with {x {- 5 5}}
    {with { y {- x x}}
        {with {foo {fun {a} {- x y}}}
            {with {x {+ -3 -3}}
                {with {y {+ x x}}
                    { foo }}}}}}
```

- Evaluación glotona y alcance estático.

Solución:

Evaluación	Pila de ejecución
```{with {x {- 5 5}}` ` {with {y {- x x}}` ` {with {foo {fun {a} {- x y}}}` ` {with {x {+ -3 -3}}` ` {with {y {+ x x}}` ` { foo }}}}}}```	`-------------------------------`
```{with {y {- x x}}` ` {with {foo {fun {a} {- x y}}}` ` {with {x {+ -3 -3}}` ` {with {y {+ x x}}` ` { foo }}}}}```	`-------------------------------` `   x   |         0` `-------------------------------`
```{with {foo {fun {a} {- x y}}}` ` {with {x {+ -3 -3}}` ` {with {y {+ x x}}` ` { foo }}}}```	`-------------------------------` `   y   |         0` `-------------------------------` `   x   |         0` `-------------------------------`
```{with {x {+ -3 -3}}` ` {with {y {+ x x}}` ` { foo }}}```	`-------------------------------` `   foo  |   {fun {a} {- x y}}` `-------------------------------` `   y   |         0` `-------------------------------` `   x   |         0` `-------------------------------`
```{with {y {+ x x}}` ` { foo 1 }}```	`-------------------------------` `   x   |        -6` `-------------------------------` `   foo  |   {fun {a} {- x y}}` `-------------------------------` `   y   |         0` `-------------------------------` `   x   |         0` `-------------------------------`

```{ foo 1 }```	`-------------------------------`
	`   y   |        -12`
	`-------------------------------`
	`   x   |        -6`
	`-------------------------------`
	`   foo  |   {fun {a} {- x y}}`
	`-------------------------------`
	`   y   |         0`
	`-------------------------------`
	`   x   |         0`
	`-------------------------------`

```{{fun {a} {- x y}} 1}```	

```
---------------------------------
    y   |        -12
---------------------------------
    x   |        -6
---------------------------------
>  foo  |   {fun {a} {- x y}}
---------------------------------
    y   |         0
---------------------------------
    x   |         0
---------------------------------
```

```
{- x y}
```

```
---------------------------------
    y   |        -12
---------------------------------
    x   |        -6
---------------------------------
>  foo  |   {fun {a} {- x y}}
---------------------------------
    y   |         0
---------------------------------
    x   |         0
---------------------------------
```

```
{- 0 0}
```

```
---------------------------------
    y   |        -12
---------------------------------
    x   |        -6
---------------------------------
>  foo  |   {fun {a} {- x y}}
---------------------------------
    y   |         0
---------------------------------
    x   |         0
---------------------------------
```

```
0
```

```
---------------------------------
    y   |        -12
---------------------------------
    x   |        -6
---------------------------------
   foo  |   {fun {a} {- x y}}
---------------------------------
>   y   |         0
---------------------------------
    x   |         0
---------------------------------
```

- Evaluación glotona y alcance dinámico.

Solución:

Evaluación	Pila de ejecución
``{with {x {- 5 5}}
{with {y {- x x}}
{with {foo {fun {a} {- x y}}}
{with {x {+ -3 -3}}
{with {y {+ x x}}
{ foo }}}}}}```	-------------------------------
``{with {y {- x x}}
{with {foo {fun {a} {- x y}}}
{with {x {+ -3 -3}}
{with {y {+ x x}}
{ foo }}}}}```	------------------------------- x | 0 -------------------------------
``{with {foo {fun {a} {- x y}}}
{with {x {+ -3 -3}}
{with {y {+ x x}}
{ foo }}}}```	------------------------------- y | 0 ------------------------------- x | 0 -------------------------------
``{with {x {+ -3 -3}}
{with {y {+ x x}}
{ foo }}}```	------------------------------- foo | {fun {a} {- x y}} ------------------------------- y | 0 ------------------------------- x | 0 -------------------------------
``{with {y {+ x x}}
{ foo 1 }}```	------------------------------- x | -6 ------------------------------- foo | {fun {a} {- x y}} ------------------------------- y | 0 ------------------------------- x | 0 -------------------------------
```{ foo 1 }```	------------------------------- y | -12 ------------------------------- x | -6 ------------------------------- > foo | {fun {a} {- x y}} ------------------------------- y | 0 ------------------------------- x | 0 -------------------------------
```{{fun {a} {- x y}} 1}```	

```
---------------------------------
   y   |        -12
---------------------------------
   x   |        -6
---------------------------------
>  foo |   {fun {a} {- x y}}
---------------------------------
   y   |         0
---------------------------------
   x   |         0
---------------------------------
```

`{- x y}`

```
---------------------------------
   y   |        -12
---------------------------------
>  x   |        -6
---------------------------------
   foo |   {fun {a} {- x y}}
---------------------------------
   y   |         0
---------------------------------
   x   |         0
---------------------------------
```

`{- -6 -12}`

```
---------------------------------
>  y   |        -12
---------------------------------
   x   |        -6
---------------------------------
   foo |   {fun {a} {- x y}}
---------------------------------
   y   |         0
---------------------------------
   x   |         0
---------------------------------
```

`6`

```
---------------------------------
>  y   |        -12
---------------------------------
   x   |        -6
---------------------------------
   foo |   {fun {a} {- x y}}
---------------------------------
   y   |         0
---------------------------------
   x   |         0
---------------------------------
```

- Evaluación glotona y alcance estático.

Solución:

Evaluación	Pila de ejecución
| ```
{with {x {- 5 5}}
    {with {y {- x x}}
        {with {foo {fun {a} {- x y}}}
            {with {x {+ -3 -3}}
                {with {y {+ x x}}
                    { foo }}}}}}
``` | ```
--------------------------------
``` |
| ```
{with {y {- x x}}
    {with {foo {fun {a} {- x y}}}
        {with {x {+ -3 -3}}
            {with {y {+ x x}}
                { foo }}}}}
``` | ```
--------------------------------
    x   |         0
--------------------------------
``` |
| ```
{with {foo {fun {a} {- x y}}}
    {with {x {+ -3 -3}}
        {with {y {+ x x}}
            { foo }}}}
``` | ```
--------------------------------
    y   |         0
--------------------------------
    x   |         0
--------------------------------
``` |
| ```
{with {x {+ -3 -3}}
    {with {y {+ x x}}
        { foo }}}
``` | ```
--------------------------------
   foo  |  {fun {a} {- x y}}
--------------------------------
    y   |         0
--------------------------------
    x   |         0
--------------------------------
``` |
| ```
{with {y {+ x x}}
    { foo 1 }}
``` | ```
--------------------------------
    x   |        -6
--------------------------------
   foo  |  {fun {a} {- x y}}
--------------------------------
    y   |         0
--------------------------------
    x   |         0
--------------------------------
``` |
| ```
{ foo 1 }
``` | ```
--------------------------------
    y   |        -12
--------------------------------
    x   |        -6
--------------------------------
>  foo  |  {fun {a} {- x y}}
--------------------------------
    y   |         0
--------------------------------
    x   |         0
--------------------------------
``` |
| ```
{{fun {a} {- x y}} 1}
``` | |

```
--------------------------------
    y    |        -12
--------------------------------
    x    |        -6
--------------------------------
>  foo  |   {fun {a} {- x y}}
--------------------------------
    y    |         0
--------------------------------
    x    |         0
--------------------------------
```

{- x y}

```
--------------------------------
    y    |        -12
--------------------------------
>   x    |        -6
--------------------------------
    foo  |   {fun {a} {- x y}}
--------------------------------
    y    |         0
--------------------------------
    x    |         0
--------------------------------
```

{- -6 -12}

```
--------------------------------
>   y    |        -12
--------------------------------
    x    |        -6
--------------------------------
    foo  |   {fun {a} {- x y}}
--------------------------------
    y    |         0
--------------------------------
    x    |         0
--------------------------------
```

6

```
--------------------------------
>   y    |        -12
--------------------------------
    x    |        -6
--------------------------------
    foo  |   {fun {a} {- x y}}
--------------------------------
    y    |         0
--------------------------------
    x    |         0
--------------------------------
```

- Evaluación perezosa y alcance estático.

Solución:

Evaluación	Pila de ejecución
``{with {x {- 5 5}}
{with {y {- x x}}
{with {foo {fun {a} {- x y}}}
{with {x {+ -3 -3}}
{with {y {+ x x}}
{ foo }}}}}}```	-------------------------------
``{with {y {- x x}}
{with {foo {fun {a} {- x y}}}
{with {x {+ -3 -3}}
{with {y {+ x x}}
{ foo }}}}}```	------------------------------- x | 0 -------------------------------
``{with {foo {fun {a} {- x y}}}
{with {x {+ -3 -3}}
{with {y {+ x x}}

{ foo }}}}```	-------------------------------
	   y | 0
	 ------------------------------- 	
	   x | 0
	 ------------------------------- 	

``{with {x {+ -3 -3}}
{with {y {+ x x}}

{ foo }}}```	-------------------------------
	  foo | {fun {a} {- x y}}
	 ------------------------------- 	
	   y | 0
	 ------------------------------- 	
	   x | 0
	 ------------------------------- 	

``{with {y {+ x x}}

{ foo 1 }}```	-------------------------------
	   x | -6
	 ------------------------------- 	
	  foo | {fun {a} {- x y}}
	 ------------------------------- 	
	   y | 0
	 ------------------------------- 	
	   x | 0
	 ------------------------------- 	

```{ foo 1 }```	-------------------------------
	   y | -12
	 ------------------------------- 	
	   x | -6
	 ------------------------------- 	
	 > foo | {fun {a} {- x y}}
	 ------------------------------- 	
	   y | 0
	 ------------------------------- 	
	   x | 0
	 ------------------------------- 	

```{{fun {a} {- x y}} 1}```	

```
--------------------------------
   y   |        -12
--------------------------------
   x   |        -6
--------------------------------
>  foo |   {fun {a} {- x y}}
--------------------------------
   y   |         0
--------------------------------
   x   |         0
--------------------------------
```

`{- x y}`

```
--------------------------------
   y   |        -12
--------------------------------
>  x   |        -6
--------------------------------
   foo |   {fun {a} {- x y}}
--------------------------------
   y   |         0
--------------------------------
   x   |         0
--------------------------------
```

`{- -6 -12}`

```
--------------------------------
>  y   |        -12
--------------------------------
   x   |        -6
--------------------------------
   foo |   {fun {a} {- x y}}
--------------------------------
   y   |         0
--------------------------------
   x   |         0
--------------------------------
```

`6`

```
--------------------------------
>  y   |        -12
--------------------------------
   x   |        -6
--------------------------------
   foo |   {fun {a} {- x y}}
--------------------------------
   y   |         0
--------------------------------
   x   |         0
--------------------------------
```

- Evaluación perezosa y alcance dinámico.

Solución:

Evaluación	Pila de ejecución
| ```
{with {x {- 5 5}}
    {with {y {- x x}}
        {with {foo {fun {a} {- x y}}}
            {with {x {+ -3 -3}}
                {with {y {+ x x}}
                    { foo }}}}}}
``` | ```
-------------------------------
``` |
| ```
{with {y {- x x}}
    {with {foo {fun {a} {- x y}}}
        {with {x {+ -3 -3}}
            {with {y {+ x x}}
                { foo }}}}}
``` | ```
-------------------------------
   x   |        0
-------------------------------
``` |
| ```
{with {foo {fun {a} {- x y}}}
    {with {x {+ -3 -3}}
        {with {y {+ x x}}
            { foo }}}}
``` | ```
-------------------------------
   y   |        0
-------------------------------
   x   |        0
-------------------------------
``` |
| ```
{with {x {+ -3 -3}}
    {with {y {+ x x}}
        { foo }}}
``` | ```
-------------------------------
  foo  |  {fun {a} {- x y}}
-------------------------------
   y   |        0
-------------------------------
   x   |        0
-------------------------------
``` |
| ```
{with {y {+ x x}}
    { foo 1 }}
``` | ```
-------------------------------
   x   |       -6
-------------------------------
  foo  |  {fun {a} {- x y}}
-------------------------------
   y   |        0
-------------------------------
   x   |        0
-------------------------------
``` |
| ```
{ foo 1 }
``` | ```
-------------------------------
   y   |       -12
-------------------------------
   x   |       -6
-------------------------------
> foo  |  {fun {a} {- x y}}
-------------------------------
   y   |        0
-------------------------------
   x   |        0
-------------------------------
``` |
| ```
{{fun {a} {- x y}} 1}
``` | |

```
    --------------------------------
      y    |         -12
    --------------------------------
      x    |         -6
    --------------------------------
>   foo  |   {fun {a} {- x y}}
    --------------------------------
      y    |         0
    --------------------------------
      x    |         0
    --------------------------------
```

```
{- x y}
```

```
    --------------------------------
      y    |         -12
    --------------------------------
>   x    |         -6
    --------------------------------
      foo  |   {fun {a} {- x y}}
    --------------------------------
      y    |         0
    --------------------------------
      x    |         0
    --------------------------------
```

```
{- -6 -12}
```

```
    --------------------------------
>   y    |         -12
    --------------------------------
      x    |         -6
    --------------------------------
      foo  |   {fun {a} {- x y}}
    --------------------------------
      y    |         0
    --------------------------------
      x    |         0
    --------------------------------
```

```
6
```

```
    --------------------------------
>   y    |         -12
    --------------------------------
      x    |         -6
    --------------------------------
      foo  |   {fun {a} {- x y}}
    --------------------------------
      y    |         0
    --------------------------------
      x    |         0
    --------------------------------
```